NOVEMBER 14, 1942

2425

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. **Telephone:** TEMPLE BAR 7228 and 7229.

No. XX OF VOL. II., 1942. LONDON, SATURDAY, NOVEMBER 14, 1942 Pp. 56—Price 1s.
No. 6220. VOL. CCXLIII. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

'KEPLER' Cod Liver Oil with Malt Extract

A palatable protective food which adds vitamins A and D to the diet. *Bottles of two sizes.*

BURROUGHS WELLCOME & CO
(The Wellcome Foundation Ltd)
LONDON

ASSOCIATED HOUSES: NEW YORK · MONTREAL · SYDNEY · CAPE TOWN · BOMBAY · SHANGHAI · BUENOS AIRES

Library of Congress
Central Serial Record
Received
DEC 16 1942
Dupe

PSYCHOLOGICAL METHODS OF HEALING
AN INTRODUCTION TO PSYCHOTHERAPY. 7s. 6d. net
"The best introduction to the subject of modern psychotherapy obtainable."—THE MEDICAL TIMES.
By WILLIAM BROWN, D.M., D.Sc., F.R.C.P.
University of London Press Ltd.
St. Hugh's School, Bickley, Kent

With 132 Illustrations. Demy 8vo, 15s. net; postage 7d.
CHEST DISEASE IN GENERAL PRACTICE.
By PHILIP ELLMAN, M.D., M.R.C.P.
Foreword by Prof. S. LYLE CUMMINS, C.B., C.M.G., M.D.
London: H. K. Lewis & Co. Ltd., 136, Gower-street, W.C.1.

ABDOMINAL OPERATIONS
By RODNEY MAINGOT, F.R.C.S. Eng.
795 Figures on 298 Plates (23 in Colour).
1400 pages. 2 Vols. £5.
D. Appleton-Century Company, 34, Bedford-street, London, W.C.2.

Now published. 12s. 6d. net + 6d. postage.
CONTROL OF COMMON FEVERS.
By twenty-one Contributors. Arranged by Dr. ROBERT CRUICKSHANK and EDITOR OF THE LANCET.
Demy 8vo. 361 + vi pages. 33 Graphs. 38 Tables.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

Third Edition. Ready Shortly. 7s. 6d. net.
PRINCIPLES OF MEDICAL STATISTICS.
BY A. BRADFORD HILL, D.Sc., Ph.D.
Demy 8vo. 189 + vii pages. 9 Graphs. 22 Tables.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

Pp. 328 + xii. 12s. 6d. net.
INTRODUCTION TO
DISEASES OF THE CHEST.
By JAMES MAXWELL, M.D. (Lond.), F.R.C.P. (Lond.).
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

Free to the Medical Profession on request. Cloth bound Ed. 5s.
ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO."
A Symposium on Prosthetic Achievement.
Pp. 72. 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co., Ltd., 7, Roehampton House, Roehampton, S.W.15.

DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.
"Mr. Joll has presented his fellow practitioners and students with a monumental volume. They need not trouble to search the literature published up to the time this volume went to press, for they will find everything relevant within its covers."—BRITISH JOURNAL OF SURGERY.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

RADIOTHERAPY IN THE DISEASES OF WOMEN.
By MALCOLM DONALDSON, B.A. (Cantab.), F.R.C.S. (Eng.) M.B., Ch.B. (Cantab.).
Physician Accoucheur with Charge of Out-patients, St. Bartholomew's Hospital; Consulting Gynæcologist, Royal Northern Hospital, &c.
Demy 8vo. 148 pages. 11 Illustrations in the Text; 2 Plates, one in Colour. Price 7s. 6d. net; postage 7d.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

THE CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.
Vols. I and II. Price 10s. 6d. each. Postage extra.
Volume I.—"Each of the 45 Sections included in the book is contributed by an experienced worker. . . ."
Volume II.—"We may say that the success of the first volume is here repeated. . . ."—BRITISH MEDICAL JOURNAL.
"Physicians and surgeons cannot afford to omit the knowledge here outlined. . . ."—BIRMINGHAM MEDICAL REVIEW.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

Ready December 1

THE
VITAMINS IN MEDICINE

FRANKLIN BICKNELL DM MRCP *and* **FREDERICK PRESCOTT** MSc PhD AIC MRCS

This is the first comprehensive English survey of the vitamins since that of the Medical Research Council in 1932. Each vitamin is considered under the headings: History, Physiology, Sources and Food Tables, Effects of Cooking and Storage, etc., Human Requirements in Health and Disease, and Conditions in which the Vitamin has been used Clinically.

Special attention is paid to the physiology and role of the vitamins in human health and medicine, since more clinical use could be made of them were their mode of action, and therefore the logic of their use in practice, more widely known.

A very full Index, for easy cross reference, has been compiled, and the Bibliographies at the end of each chapter contain the titles of over 2200 papers. The illustrations, many original photographs, have been chosen for their practical value.

Pages vii+662 · 120 illustrations · 45s net

WM HEINEMANN • MEDICAL BOOKS • LTD 99 GREAT RUSSELL STREET LONDON WC1

Soneryl

M&B

*'Soneryl' brand butobarbitone will be found to deal adequately with most of the cases of insomnia encountered in general practice. An outstanding characteristic of this product is the lack of "post-hypnotic lethargy" associated with its use.

Most patients who are compelled to take 'Soneryl' over lengthy periods remain normal in their mental and physical attributes and it is for this reason no less than others that 'Soneryl' is widely prescribed.

*'SONERYL' brand butobarbitone

IS AVAILABLE IN

Containers of 25 × gr. 1½ tablets 3s. 0d.

(Less professional discount and plus purchase tax)

*TRADE MARK

OUR MEDICAL DEPARTMENT WILL BE GLAD TO SUPPLY YOU WITH FURTHER INFORMATION

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LIMITED, DAGENHAM

5003

NOVEMBER 14, 1942

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6220 LONDON: SATURDAY, NOVEMBER 14, 1942 CCXLIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Juvenile Rheumatism: Its Problems
REGINALD MILLER, FRCP.... 563

Sulphonamide Sensitisation
DAVID ERSKINE, MD..... 568

Ascorbic Acid in Meals at British Restaurants and School Canteens
R. G. BOOTH, PH D, G. V. JAMES, PH D, Prof. J. R. MARRACK, MD, W. W. PAYNE, MRCP, FRANK WOKES, PH D.. 569

Shock: Treatment by Direct Action on Vegetative Nerve Centres
Prof. LINA S. STERN..... 572

Treatment of Pulmonary Tuberculosis by Lung Puncture
Prof. CARLOS ROBERTSON LAVALLE (*illus.*)..... 573

Absorption and Excretion of Oxalate
J. F. BARRETT, B SC..... 574

LETTERS TO THE EDITOR

Comfrey, Maggots and Urea (Dr. C. J. Macalister, Mr. Hamilton Bailey, FRCS)..... 586

Complement Fixation in Typhus Fever Group (Mr. A. Felix, D SC) 586

Mechanism of Convulsive Therapy (Dr. H. Pullar-Strecker)..... 587

Rickets in the Breast-fed Baby (Miss E. Morrison, SRN)..... 587

Masked Hyperthyroidism (Dr. Laurence Martin)..... 587

Nicotinic Acid for Angina Pectoris? (Dr. G. Brock)..... 587

Instruction in Vaccination (Mr. C. R. Woodard and others).... 588

LEADING ARTICLES

CONTROL OF VENEREAL DISEASE 577

LUNG PUNCTURE IN THERAPY.... 578

TOXÆMIA AND PLACENTAL ISCHÆMIA..... 578

DEFENSIVE SECRECY..... 579

ANNOTATIONS

Prof. Lina Stern..... 580

Platelets and Thrombosis..... 579

Radium for Uterine Hæmorrhage. 580

Virus Infections of the Mammalian Fœtus..... 580

"The Doctors Mayo"..... 581

Ophthalmic Bogies..... 581

Physiology of the Premature Infant..... 581

Ratcatchers' Riddle..... 582

Minimising Oxaluria..... 582

REVIEWS OF BOOKS

Epilepsy and Cerebral Localisation. A Study of the Mechanism, Treatment, and Prevention of Epileptic Seizures. Prof. Wilder Penfield, MD, Prof. Theodore C. Erickson, MD..... 576

Surgery of Modern Warfare. Editor: Hamilton Bailey..... 576

A Descriptive Atlas of Radiographs. A. P. Bertwistle, FRCSE..... 576

Edinburgh Post-Graduate Lectures in Medicine..... 576

Neuroanatomy. Prof. Fred A. Mettler, MD..... 576

Parents Revolt. Richard and Kathleen Titmuss..... 576

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents.... 584

SPECIAL ARTICLES

A Conference on Injuries..... 583

Medicine and the Law: Mistaken Diagnosis of Pregnancy..... 584

PUBLIC HEALTH

London in 1941..... 588

Cancer in War-time..... 588

Infectious Disease in England and Wales..... 588

Small-pox in Scotland..... 588

NOTES AND NEWS

New Compulsory Powers in Control of Venereal Disease..... 589

Facial Hemiatrophy..... 586

University of Cambridge..... 590

Royal College of Surgeons..... 589

Royal College of Physicians of Edinburgh..... 589

Royal Faculty of Physicians and Surgeons of Glasgow..... 589

Royal College of Obstetricians and Gynæcologists..... 589

Tuberculosis Association..... 590

Transfusions for Maternity Cases. 589

Gastroenterology..... 588

Association of Anæsthetists..... 590

A Notable Meeting..... 589

New EMS Hospital in Wales.... 590

Royal Society of Medicine..... 589

The Architect and the Hospital.. 567

Ministry of Health: Winter Health Campaign..... 571

Lease-Lend..... 575

Lancet Crossword..... 590

Appointments—Births, Marriages and Deaths..... 590

THE LONDON AND COUNTIES
MEDICAL PROTECTION SOCIETY, Ltd.

President: SIR CUTHBERT S. WALLACE, K.C.M.G., C.B., F.R.C.S.

Members receive UNLIMITED INDEMNITY (subject to the Articles of Association) against damages and costs in cases undertaken on their behalf and advice and assistance in all matters of professional difficulty.

The estate of a deceased member is similarly protected.

Assets exceed £90,000

Annual Subscription £1

Entrance Fee 10s.
(REMITTED TO RECENTLY QUALIFIED PRACTITIONERS)

Full particulars and application form from:—
THE SECRETARY, VICTORY HOUSE, LEICESTER SQUARE, W.C.2. Gerrard 4553, 4814.

DOWN BROS.

LIMITED

SURGICAL INSTRUMENT AND HOSPITAL FURNITURE MANUFACTURERS

•

All Correspondence now to

NEW HEAD OFFICE

23, PARK HILL RISE,

CROYDON

Telephone: Croydon 6133

•

Showrooms and Fitting Rooms

22a, CAVENDISH SQUARE,

LONDON, W.1

MAYfair 0406

LUCOZADE

during children's illnesses

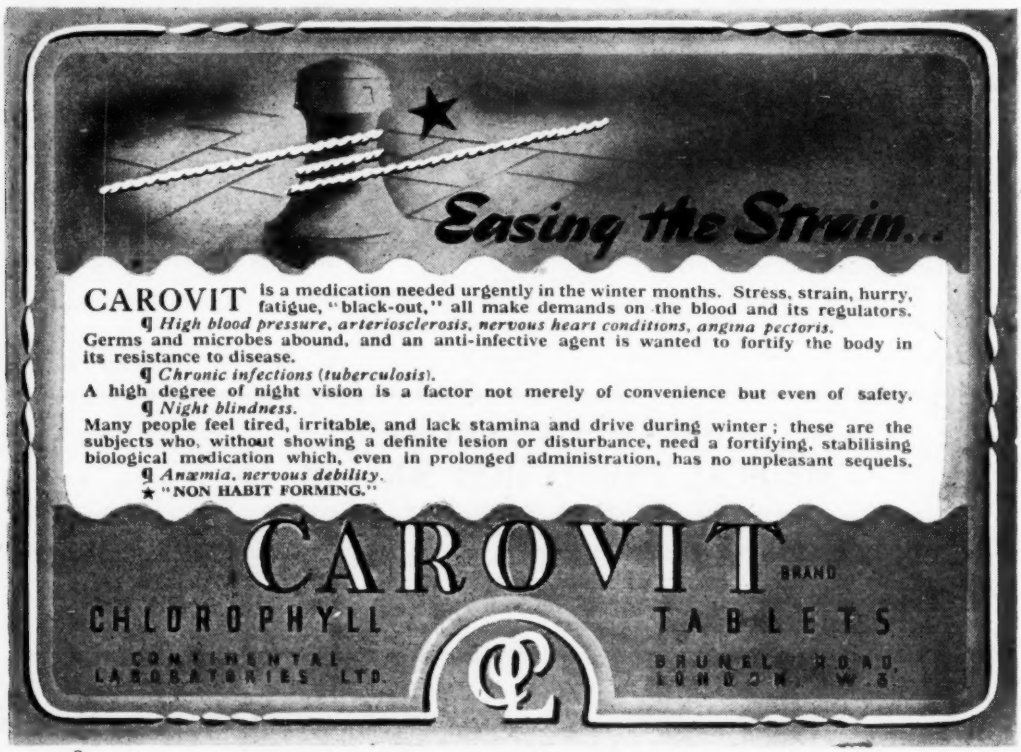
LUCOZADE supplies a *real need* in conditions when children refuse the usual light diets, especially during illnesses of the febrile type where there is also much thirst. This *glucose-containing tonic beverage* is markedly superior to ordinary glucose preparations *and the children will like it.* Its flavour, refreshing and extremely palatable, will have special attraction for them. It promotes a beneficial psychological response. The general stimulating qualities of LUCOZADE make it very useful for cases of summer diarrhœa, measles, whooping-cough and other infections. It requires no digesting, is readily absorbed and well retained by the system. In many critical cases LUCOZADE has been the only nourishment taken by patients for several days.

of marked value for

ANOREXIA, BILIOUSNESS, MEASLES, WHOOPING-COUGH, TRAVEL SICKNESS, KETOSIS, FEBRILE ILLNESSES, FAULTY METABOLISM, HYPOTONIA, SHOCK, PHYSICAL EXHAUSTION, MENTAL OVERSTRAIN, PRE- AND POST-OPERATIVE TREATMENT.

For further information please apply to:
THE MEDICAL DEPT., LUCOZADE LTD., GT. WEST RD., BRENTFORD, MIDDX.

M10B


Easing the Strain...
CAROVIT is a medication needed urgently in the winter months. Stress, strain, hurry, fatigue, "black-out," all make demands on the blood and its regulators.
¶ *High blood pressure, arteriosclerosis, nervous heart conditions, angina pectoris.*
Germs and microbes abound, and an anti-infective agent is wanted to fortify the body in its resistance to disease.
¶ *Chronic infections (tuberculosis).*
A high degree of night vision is a factor not merely of convenience but even of safety.
¶ *Night blindness.*
Many people feel tired, irritable, and lack stamina and drive during winter; these are the subjects who, without showing a definite lesion or disturbance, need a fortifying, stabilising biological medication which, even in prolonged administration, has no unpleasant sequels.
¶ *Anæmia, nervous debility.*
★ "NON HABIT FORMING."
CAROVIT BRAND
CHLOROPHYLL TABLETS
CONTINENTAL LABORATORIES LTD.
BRUNEL ROAD, LONDON, W.3.

Twelve New Books

of J. & A. CHURCHILL LTD.

THE THEORY OF EMULSIONS

And Their Technical Treatment

By W. CLAYTON, D.Sc., Head of the Technical Development Dept., The Metal Box Co. Ltd., London (*pro tem.* at Ministry of Food)

Fourth Edition — **42s.** — 103 Illustrations

RECENT ADVANCES IN ANÆSTHESIA AND ANALGESIA
By C. LANGTON HEWER, M.B., B.S., D.A., Anæsthetist and Demonstrator of Anæsthetics, St. Bartholomew's Hospital. *Fourth Edition.* 130 Illustrations. **18s.**

HALE-WHITE'S MATERIA MEDICA, PHARMACY, PHARMACOLOGY AND THERAPEUTICS
Revised by A. H. DOUTHWAITE, M.D., F.R.C.P., Physician, Guy's Hospital. *Twenty-fifth Edition.* **14s.**

MEDICINE: Essentials for Practitioners and Students
Fourth Edition. 71 Illustrations. **28s.**

A POCKET MEDICINE **10s. 6d.**
By G. E. BEAUMONT, D.M., F.R.C.P., Physician to the Middlesex Hospital.

DISEASES OF THE EYE
By SIR JOHN HERBERT PARSONS, *C.B.E.*, D.Sc., F.R.C.S., F.R.S., Consulting Ophthalmic Surgeon, University College Hospital, London. *Tenth Edition.* Revised with the assistance of H. B. STALLARD, M.D., F.R.C.S. 21 Plates, 20 in Colour. 372 Text-figures. **25s.**

A TEXTBOOK OF BIOCHEMISTRY
By A. T. CAMERON, D.Sc., F.I.C., F.R.S.C., Professor of Biochemistry, University of Manitoba. *Sixth Edition.* 3 Plates and 25 Text-figures. **18s.**

RECENT ADVANCES IN PATHOLOGY
By G. HADFIELD, M.D., F.R.C.P., Professor of Pathology in the University of London; and L. P. GARROD, M.D., F.R.C.P., Professor of Bacteriology, University of London. *Fourth Edition.* 35 Illustrations. **18s.**

CLINICAL ATLAS OF BLOOD DISEASES
By A. PINEY, M.D., M.R.C.P., Assistant Physician, St. Mary's Hospital for Women and Children; and S. WYARD, M.D., F.R.C.P., Physician, The Royal Cancer Hospital, London. *Fifth Edition.* 46 Plates (43 Coloured). **16s.**

RECENT ADVANCES IN OBSTETRICS AND GYNÆCOLOGY
By ALECK W. BOURNE, F.R.C.S., F.R.C.O.G., Obstetric Surgeon to St. Mary's Hospital; and LESLIE H. WILLIAMS, F.R.C.S., F.R.C.O.G., Senior Obstetric Surgeon to Out-patients, St. Mary's Hospital. *Fifth Edition.* 72 Illustrations. **18s.**

ANTENATAL AND POSTNATAL CARE
By F. J. BROWNE, M.D., F.R.C.S.Ed., F.R.C.O.G., Professor of Obstetrics and Gynæcology, University of London. *Fourth Edition.* 84 Illustrations. **24s.**

DISORDERS OF THE BLOOD
By L. E. H. WHITBY, *C.V.O., M.C.*, M.D., F.R.C.P., and C. J. C. BRITTON, M.D., D.P.H., Assistant Pathologists, The Bland-Sutton Institute of Pathology, The Middlesex Hospital. *Fourth Edition.* 12 Plates, 8 Coloured, and 59 Text-figures. **28s.**

104 GLOUCESTER PLACE LONDON W.1

Thermega Regd.
MEDICAL APPLIANCES

made by the Pioneers of electrically-heated blankets in the U.K., are approved and used by the ADMIRALTY, AIR MINISTRY, and leading HOSPITALS.

Reliability

Best quality materials and workmanship. GUARANTEED for twelve months, but will last for years.

DOUBLE PROTECTION. 'Thermega' medical blankets have *two independent thermostats*, each operating in a vacuum, ensuring (1) constant temperature, (2) safety near volatile gases.

Service

Periodical visits to Medical Institutions are made (free of charge) for inspection of 'Thermega' equipment.

Write for descriptive booklet No. 53 which illustrates BLANKETS, Ward, Operating Theatre, Ambulance and Accident Reception.

CAGE HEATERS for Limbs, Prematurely-born babies, etc. PADS, for local application. Specially designed appliances for Ear, Eye, Head and other purposes.

'THERMEGA' is the accepted standard for electrically-heated Medical Equipment.

THERMEGA LTD.
51-53
VICTORIA ST.
LONDON, S.W.1
(Abbey 5701-2-3)

"OXOID"

The word "OXOID" is the trade mark of OXO Ltd., and is used in connection with their therapeutical preparations both in tablet and fluid extract form.
ORGANO-THERAPEUTICAL PRODUCTS

OXO LABORATORY PREPARATIONS

"HORMONOXOID"

(Thyroid—Pituitary W.G.—Gonadic)

TABLETS

A pluriglandular preparation for the stimulation of the Endocrine Glands.

Suitably prescribed in cases where the symptoms indicate a disturbance of the normal functioning of the glands.

Corrects menstrual irregularities and relieves distress during the menopause.

Bottles of 25, 100, 250, 500 *and* 1,000 *Tablets.*

OXO LIMITED
Thames House, Queen Street Place, London, E.C.4.

OXO LABORATORY PREPARATIONS

ANNOUNCING

CHEMOTHERAPY

SULPHAGUANIDINE-EVANS

The results of Marshall and his co-workers; Anderson, Cruikshank, and others, justify the use of sulphaguanidide as an intestinal antiseptic particularly in bacillary dysentery and colonic surgery. On the basis of the pharmacological studies the drug is also suggested for trial in such diseases as cholera, ulcerative colitis and gastro-enteritis.

SULPHAGUANIDINE-EVANS
is issued in compressed tablets of 0.5 grm.

Bottles of 25, 5/9 ea. Bottles of 100, 19/6 ea.
Bottles of 500, 87/6 ea.

Prices apply to Gt. Britain and N. Ireland and are subject to usual discounts.

Technical literature will be supplied on request to Home Medical Department, Concert St. Liverpool, 1

EVANS

MEDICAL PRODUCTS

Made in England by

EVANS SONS LESCHER AND WEBB LTD.

LIVERPOOL AND LONDON

M.26b

4

No Enzymes for Miss Blandish

TO THE unaccustomed physical and emotional strain under which many middle-aged women are now working must be added the normal disturbances of the secretory gastric functions in increasing age as a cause of gastro-intestinal ailments. The enzymic action of Benger's Food in such cases is of great benefit to the patient. Benger's Food rests the digestive organs, sustains the patient without digestive strain and at the same time allows the doctor to vary the degree of predigestion in accordance with the power of assimilation and the need for regulated digestive exercise.

THE ENZYMIC ACTION OF BENGER'S FOOD

As a result of self-digestive action by natural pancreatic enzymes, the milk proteins are so modified that when prepared Benger's Food comes into contact with the gastric juices, it separates into fine flocculi, presenting a very large surface area to the gastric juice. This is in marked contrast to the characteristic curd of unmodified milk. By the time Benger's Food is sufficiently cool to drink, the self-digestion is carried as far as it need be for all cases where digestion is partially impaired.

BENGER'S LTD · HOLMES CHAPEL · CHESHIRE

The Power to Destroy

Less dramatic . . . but no less destructive than the deadliest weapons of war . . . are the common pathogenic bacteria. Fortunately, Medicine has in Tincture Metaphen an agent of defence whose potency has been repeatedly—and impressively—demonstrated. Two investigators recently tested Tincture Metaphen against fifteen other antiseptic agents.* They found that, on the oral mucosa, Tincture Metaphen reduced bacteria count 95 to 100 per cent within five minutes; had a duration of action of two hours—about 200% longer than for any other antiseptic tested; and caused only a slight irritation in some cases, none in the others. Tincture Metaphen is supplied in 1, 4, 16 and 80 fluid ounce bottles. Abbott Laboratories (England) Limited, Wadsworth Road, Perivale, Middlesex.

* *Meyer, E., and Arnold, L., Amer. J. Digest. Dis., 5:418*

TINCTURE METAPHEN

Tincture of 4-nitro-anhydro-hydroxy-mercury-orthocresol, Abbott

Seasonal Perils

This is the time of chills, colds, influenza and rheumatic pains. When called upon to treat these ailments no doctor is content to prescribe draughts and drugs that will alleviate pain without having some curative effect.

VEGANIN is sound treatment, being a synergistic combination of acetylsalicylic acid, phenacetin and codeine.

It is dissolved by the gastric juices in a few seconds and relieves pain almost immediately. In the patient's words, Veganin "acts like a charm."

Veganin achieves more: it controls pyrexia, has a specific effect in rheumatic conditions and chills and relieves irritating cough.

Veganin can be repeated; it is neither toxic nor habit-forming.

WILLIAM R. WARNER & CO., LTD., POWER ROAD, CHISWICK, LONDON, W.4

Check

GASTRIC HYPERACIDITY WITHOUT THE USE OF ALKALIES!

The recent increase in patients seeking advice for gastric conditions tends to prove that the nervous strains the public are passing through at the present time are responsible for their condition.

Reports are being received that these cases respond rapidly to treatment with 'Aludrox' Brand Amphoteric Gel, which, after neutralising the free hydrochloric acid in the stomach, leaves the gastric contents still mildly acid, permitting digestion to proceed.

Prescribe 'Aludrox' for your patients suffering from gastric disorders due to nervous tension and note the gratifying results.

'ALUDROX'
BRAND
Amphoteric Gel

JOHN WYETH & BROTHER LTD. 25, OLDHILL PLACE, LONDON, N.16.
(Sole distributors for Petrolagar Laboratories Ltd)

MIST. DAMIANÆ CO.

(HEWLETT'S)

In all the various forms of loss of nerve power Mist. Damianæ Co. (Hewlett's) is a powerful remedy, relieving the exhaustion and conferring renewed capacity for mental and physical endurance. Its invigorating properties will be found invaluable in many diseases where there is great exhaustion. **In the frequent cases of nervous depression following influenza it has been prescribed with great benefit.**

Dose: One or Two drachms in Water

Packed in 5-oz., 10-oz., 22-oz., 40-oz., and 90-oz. Bottles

Caution. This preparation was introduced by us over 40 years ago. To obtain the *original* please write :—

Mist. Damianæ Co. (Hewlett's)

one of HEWLETT'S preparations

C. J. HEWLETT & SON, LTD., MANUFACTURING CHEMISTS, LONDON, E.C.2.

Balanced Feeding

FOR infants exhibiting fat intolerance, the balance of fat, protein and carbohydrate in cow's milk and full cream milk foods, is unsuitable.

Even in the absence of actual vomiting, fat passes through the digestive tract without assimilation. The result of this is under-nourishment. The solution of the problem is adjustment of the balance of the food. Such an adjustment has been made in COW & GATE HALF CREAM MILK FOOD, as may be seen from the accompanying analytical figures. The suitability of the balance achieved has been proved by the ever-increasing use of the food over many years.

COMPOSITION

	Powder	Reconstituted Milk (1 in 9)
Fat	15.0%	1.7%
Proteins ...	20.0	2.2
Lactose	58.0	6.4
Mineral Salts	4.5	0.5
Moisture ...	2.5	89.2
	100.0	100.0
Calorific Value per oz.	129	14.3

In view of the difficulty in obtaining the usual orange juice to supplement infant feeding, Vitamin C (ascorbic acid) is now incorporated in this food. The addition is equivalent to the following daily orange juice intake:

At age 1 month—
2 teaspoonfuls of orange juice

At age 8 months—
4 teaspoonfuls of orange juice

Cow & Gate Milk Food
HALF CREAM

Other COW & GATE Products:

FULL CREAM - A complete food for normal infants
HUMANISED - For reduced protein intake
HEMOLAC - - For nutritional anæmia
LACIDAC - - For gastro-intestinal disturbance
ALLERGILAC - For milk allergy
FRAILAC - - - For prematurity
PRENATALAC For use during pregnancy and lactation

A supply for clinical trial with descriptive literature will be sent free on request to: Cow & Gate Medical Research Dept. L., Guildford, Surrey.

© 3078

MENAPHTHONE—BOOTS

Vitamin K Analogue

Menaphthone is included in the third addendum to the British Pharmaceutical Codex and is a synthetic vitamin K analogue for the treatment of all conditions associated with a delayed blood-clotting time, due to prothrombin deficiency. Menaphthone is indicated in the treatment of neo-natal haemorrhage, idiopathic steatorrhoea, obstructive jaundice, biliary fistula and coeliac disease.

Tablets of Acetomenaphthone-Boots are available for prophylactic administration to the mother before delivery.

MENAPHTHONE-BOOTS
2-methyl-1 : 4-naphthaquinone
Ampoules of 5 mg.
Boxes of 6 ampoules - 7/3½

For oral administration:
ACETOMENAPHTHONE-BOOTS
1 : 4-diacetoxy-2-methylnaphthalene
Tablets of 10 mg.
Bottle of 25 - 3/2½
Bottle of 100 - 8/11½
Prices net.

Obtainable through all branches of

Boots the Chemists

Literature sent upon request

BOOTS PURE DRUG CO. LTD NOTTINGHAM

9796-53

WAR-TIME hospital practice throws even greater emphasis on the need for a form of concentrated nourishment —a perfect invalid food. Practically all patients on admittance to hospital are acutely ill and have undergone a period of high nervous tension.

Experience has shown that administration of an easily digested and readily acceptable form of nourishment is followed by definite improvement in the patient's condition.

For this purpose, both as an emergency measure and as a regular routine, "Ovaltine" is outstandingly effective. The nutritive and energising constituents of "Ovaltine" are rapidly assimilated, relieving "hunger feeling" and, at the same time, allaying nervous tension in a most helpful manner.

"Ovaltine" possesses many advantages. It is a food concentrate containing the vitamins A, B complex and D, and important mineral elements. Its content of "first-class" protein, carbohydrate and fat is carefully adjusted to the optimal ratio for metabolic needs. Moreover, "Ovaltine" possesses special properties which make milk more digestible, and thus easily assimilated by even the most acutely ill patient.

Now, as in 1914–1918, "Ovaltine" is widely used in the war-time hospital service, both at home and overseas. Supplies are available to hospitals in special packings and at special prices.

A liberal supply for clinical trial sent free on request

A. WANDER LTD.
184 Queen's Gate, S.W.7

Laboratories and Works:
King's Langley, Herts

M297

An effective weapon against
FATIGUE AND DEPRESSION

THE most consistent effects of 'Benzedrine' Tablets are relief of fatigue, mental stimulation, and euphoria. The compound is of special service in depressive and asthenic states due to chronic physical or mental strain, and has important possibilities as an emergency measure for those faced with prolonged arduous duties. Tiredness is postponed; thinking processes are speeded up without impairment of attention or judgment; indecision is benefited; and there is a sense of increased energy and capacity for work.

Samples and literature will be sent on the signed request of physicians.

'BENZEDRINE' TABLETS

MENLEY & JAMES LTD., 123 COLDHARBOUR LANE, LONDON, S.E.5

BT 9

Food for Children

Although an optimum diet for children is not possible in wartime, the standard must not be allowed to fall. Symptoms of gross dietary deficiency are seldom encountered, but evidence of malnutrition is not uncommon.

To enable children to show greater resistance to disease careful attention should be paid to the relative values of all foods available. Marmite is useful as a source of the B vitamins: it supplies aneurin, riboflavin, nicotinic acid and other factors of the B complex.

MARMITE
YEAST EXTRACT

THE MARMITE FOOD EXTRACT CO. LTD., 35 Seething Lane, London, E.C.3

4211

TRADE MARK **'SECONAL'** BRAND
SODIUM PROPYL-METHYL-CARBINYL ALLYL BARBITURATE

A Rapidly Effective and Short Acting Barbiturate for Dependable Sedation and Hypnosis

'Seconal' will be found exceptionally useful for medical indications or before surgical procedures where a comparatively rapid and brief acting hypnotic or sedative is required.

'Seconal' is supplied in 1½ grain and ¾ grain 'Pulvules' brand filled capsules in bottles of 40 and 500.

ELI LILLY AND COMPANY LTD.
BASINGSTOKE AND LONDON

Collosol Manganese Crookes'

Marked results have been obtained in the treatment of coccogenic and pyogenic affections by the use of *Collosol* Manganese. It is invariably tonic and stimulating, and increases the protective powers of serum proteins.

Since it is a colloidal preparation, precipitation on admixture with the blood must be prevented and this is achieved by the use of suitable colloidal protective agents. Injected intramuscularly, there is the minimum of discomfort, and by the oral route *Collosol* Manganese may be administered to children with perfect safety.

Full clinical literature together with details of packings and prices available on request.

for
use in the treatment of
BOILS · CARBUNCLES · ABSCESSES
CHRONIC ULCERS · GONORRHOEA
ACNE · PSORIASIS, ETC.

THE CROOKES LABORATORIES (British Colloids Ltd.) PARK ROYAL, LONDON, N.W.10
Telephone: Willesden 6313 (5 lines) Telegrams: Collosols, Harles, London

THE

'METHEDRINE' BRAND INHALER

in nasal congestion

gives prompt symptomatic relief in coryza, hay fever, sinusitis, rhinitis, and similar conditions.

The inhaler contains a renewable charge of 'Methedrine' brand *d*-methylisomyn, a volatile vasoconstrictor allied to adrenaline and ephedrine.

Upon inhalation the vapour penetrates readily to all parts of the upper respiratory tract.

The charge is contained in a moulded plastic case designed for convenience in use—a compact inhaler easily carried in pocket or handbag, and unobtrusive in use.

The cost of the inhaler is 1/9, Purchase Tax 2½d. extra, refills 1/3 each, Purchase Tax 2d. extra.

BURROUGHS WELLCOME & CO

(The Wellcome Foundation Ltd)

LONDON

ASSOCIATED HOUSES: NEW YORK MONTREAL SYDNEY CAPE TOWN BOMBAY SHANGHAI BUENOS AIRES

'Mapharside'

An Improved Arsenical for the Treatment of Syphilis

'Mapharside' (meta-amino-para-hydroxy-phenyl-arsine oxide hydrochloride) is a potent spirochæticide which is the result of co-operative research by groups in two American Universities and the Research Department of Parke, Davis & Co. This compound contains 29 per cent. of arsenic, and it is effective in a dosage approximately one-tenth that of arsphenamine.

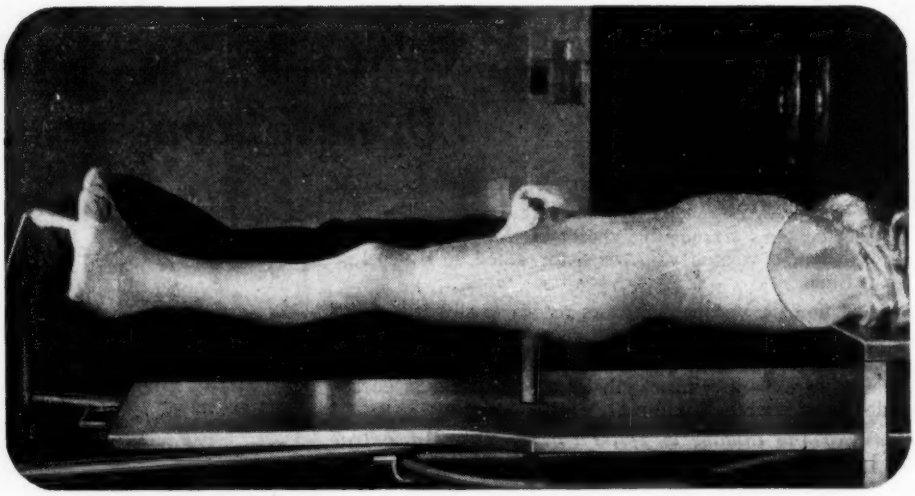
SOME ADVANTAGES

1. 'Mapharside' is practically a pure chemical substance.
2. 'Mapharside' solutions do not become more toxic on standing.
3. 'Mapharside' is ready for injection by simple solution of the ampoule contents—no neutralization is required.
4. 'Mapharside' permits treatment of syphilis with small doses of arsenic.
5. Reactions following the use of 'Mapharside' are on the whole less severe than those observed after the use of arsphenamine and neoarsphenamine.
6. 'Mapharside' is chemically and biologically assayed.

IN ONE-DOSE AMPOULES OF 0·04 AND 0·06 GM.

Parke, Davis & Co., 50, Beak Street, London, W.1

Inc. U.S.A., Liability Ltd.



Wide 'Cellona'—hip spica plaster

THE hip spica plaster made from wide ' Cellona ' is applied in three pieces—posterior body piece, anterior body piece and leg piece, each cut from seven layers of 24-ins. wide ' Cellona ' material. The application of the plaster is completed and the cast trimmed within 15 minutes. It weighs 7 lbs. when dry.

' Cellona ' material in widths of 18, 24 and 36 ins. by 6 yards or 12 yards long has been found by practical experience to offer unique advantages in the construction of large plasters and in preparing slabs for the " closed " treatment of compound fractures, burns and war injuries.

Jackets, fillets, spicas, shells and other large plasters made from 'Cellona' are remarkable for their exceptional strength and resilience.

The technique of preparation and application of Forearm, Full Arm, Shoulder Spica, Below Knee, Mid-Thigh and Hip Spica Plasters and Spinal Jackets is described and illustrated with diagrams and photographs in a 20-page brochure. This is available to Surgeons interested in plaster technique, and a copy will be forwarded free on application to

T. J. SMITH & NEPHEW LTD., HULL. MAKERS OF 'CELLONA' AND 'ELASTOPLAST' BANDAGES.

JUVENILE RHEUMATISM: ITS PROBLEMS*

REGINALD MILLER, M D LOND, F R C P
SENIOR PHYSICIAN TO ST. MARY'S HOSPITAL, PADDINGTON

THE whole clinical aspect of the rheumatic state in childhood and early life was for the first time brought into correct focus by W. B. Cheadle in his Harveian lectures for 1888, and with such accuracy that only comparatively minor readjustments have since been required. Endocarditis, pericarditis, pleurisy, tonsillitis, exudative erythema, chorea and subcutaneous nodules were described as seven phases of the disease which, together with arthritis, formed the rheumatic series. Cheadle expressed no personal views on causation. After mentioning infection as a possible explanation of the rheumatism of childhood he was content vaguely to allude to "the rheumatic poison, or whatever the morbid influence may be," and in this he doubtless merely reflected the unsettled views of those days. In 1900 these lectures, revised with the assistance of F. J. Poynton, were republished. The original text was reproduced almost without alteration but a description of rheumatic myocarditis, which by then had been studied by D. B. Lees and Poynton, was added and a more sympathetic allusion to the infective hypothesis of causation. With the turn of the century the study of juvenile rheumatism became concerned particularly with bacteriology and carditis. Its bacteriology was chiefly associated with the names of Poynton and A. Paine, and the study of carditis with the name of C. F. Coombs. The bacteriological problem seemed to be simple at the start but proved to be, and remains, complex and difficult. With some modification in nomenclature the views of Poynton and Paine survived a deplorably fierce controversy in this country and made progress in the calmer atmosphere of America, but with the passage of time they have become once again a permissible subject for discussion here under the neutral formula of "the streptococcal hypothesis." Coombs in 1924 published the first monograph on rheumatic carditis. In this he elaborated independently the work of Aschoff, and his results not only strongly supported an infective origin for the disease but showed that the histopathological changes—the tissue-reactions to the infecting agent—were peculiar to this disease.

Juvenile rheumatism has thus come to be regarded as a generalised infection producing a definite clinical picture associated with special pathological features; and in spite of a lack of agreement on the exact type of infecting agent, this conception of the disease has been sufficiently widely accepted to form the basis of further research.

The third and present phase of study is chiefly concerned with the disease as a problem in public health. Such a development was overdue. It seemed as though the bacteriological controversy had frightened workers in this country off the subject, and juvenile rheumatism had become accepted as unavoidable; but the appeals of Poynton and other enthusiasts for special help in dealing with rheumatic heart disease in children, and the beginning of preventive work in America, gradually prepared medical opinion here for organised efforts. At the annual meeting of the British Medical Association in 1923, the medical section asked for a committee of investigation to consider rheumatic heart disease. The first report of this committee, published in 1926, dealt with causation, the second report with prevention and control. In 1927 the Medical Research Council published a report on social conditions and acute rheumatism, and in the same year the Ministry of Health reported on acute rheumatism in children in its relation to heart disease. These may be taken as the starting-point of an organised effort to prevent and control juvenile rheumatism in this country.

The term juvenile rheumatism came first into use when acute rheumatism in children under sixteen years of age was made a notifiable disease in Paddington on March 1, 1927.

Clinical Problems

The clinical picture of juvenile rheumatism is now completely drawn, and will need little modification when the bacteriological problem has been finally solved. I shall not describe here the manifestations of the disease, but will discuss their significance in the general scheme of the infection.

Tonsillitis.—That an attack of acute rheumatism was commonly ushered in by tonsillitis was well recognised by Cheadle who regarded the tonsillitis as a manifestation of the disease. This is true but not the whole truth. If the streptococcus associated with the production of acute rheumatism is to be regarded, as seems likely, as a normal inhabitant of the alimentary tract, what factor enables it to undertake a rôle of "parvenu pathogenicity" as Coombs called it? On the other hand, a tonsillitis which seemingly belongs to a different infective disease may also be followed by rheumatism: the sequence of acute rheumatism after scarlet fever has long been recognised, and more recently attention has been called to the same effect of the tonsillitis of epidemic influenzal catarrhs in wards full of rheumatic children. Yet we cannot regard rheumatism itself as a result of infection by streptococci commonly classed as hæmolytic, nor is the suggestion that the disease in children is ordinarily set up by case-to-case infection in agreement with clinical tradition. A further point, discussed of late years, is the interval of time which often elapses between the initial sore-throat and the acute attack of rheumatism. The regularity of this "silent period," as Bernard Schlesinger has called it, has perhaps been overemphasised, but it is certainly common that in the development of juvenile rheumatism there is first a period of some months with recurring mild sore-throat and rheumatic symptoms, then an attack of acute tonsillitis, and finally, within 3–21 days, the full-blown acute rheumatic attack. Whether this sequence indicates that allergy is important in the production of the acute phases of the disease has been much discussed.

From the practical point of view, the throat seems to serve as the chief portal of entry for the infecting agent to the blood-stream. The importance of acute or chronic tonsillar infection is therefore great, and it is noteworthy that in tonsillectomised children first or early attacks of rheumatism tend to be relatively mild, limited largely to chorea without carditis.

Carditis.—It is agreed that carditis is especially prone to develop in the rheumatism of childhood, following the rule that in children, more than in adults, infections tend to become generalised. It is further agreed that the carditis of juvenile rheumatism is primarily responsible for the many deaths from heart disease in early middle age among the parents of young families—the peculiar tragedy of this disease. But it is not always recognised that the incidence of carditis depends not only on the frequency but on the virulence of the infection. Efforts to control juvenile rheumatism should not be criticised merely on the ground that they fail to prevent rheumatism: the essence of the matter is whether the disease has been so modified that the incidence of cardiac lesions is relatively light. It is on this point, for example, that the argument in favour of the removal of infected tonsils in rheumatic children is based.

Chorea.—Cheadle regarded rheumatism as by far the commonest cause of chorea, but hesitated to pronounce it an essential factor in the production of that disorder. Later laborious statistical investigations showed that rheumatism could be recognised in such a large proportion of cases of chorea, before, during and after an attack, that the small margin left was no greater than could be accounted for by instances of rheumatic infection in which chorea existed as the sole manifestation. Of late, however, some authorities in America have expressed the opinion that chorea by itself is not to be regarded as proof of rheumatic infection in a child. The increase in the apparently non-rheumatic cases of chorea is possibly due to modified severity of the infection. The high proportion of uncomplicated chorea in tonsillectomised children has already been mentioned; and it has always been agreed, as Coombs pointed out, that in some children chorea is produced by a smaller dose of rheumatic infection than any other manifestation of the disease. To recede from the established panrheumatic view of chorea seems regrettable, since it brings a risk of possible misinterpretation of an early symptom of juvenile rheumatism.

* The Lumleian lectures for 1942; not delivered owing to the war.

We may also look for evidence of chorea in cases of rheumatism rather than for rheumatism in cases of chorea. The dictum, attributed to Sir Thomas Barlow, that "all rheumatic children show chorea, only some more so" is strictly true. In the active phases of infection a subclinical or latent form of chorea is shown by general nervous and mental instability, with fidgetiness under observation; in the prodromal stages there is a tendency to such disorders as tics, night-terrors, enuresis and sleep-walking, and an impression has grown up that juvenile rheumatism is particularly prone to develop in nervous children. This is a difficult conception to any who regard the disease of infective origin, and it is probably more correct to regard the nervousness of the rheumatic child as a result rather than as a predisposing cause of his disease. On the other hand, should he acquire rheumatism, the inherently nervous child is more likely to develop chorea than any other manifestation of the infection.

Subcutaneous nodes.—The threefold clinical significance of these has long been established: in their typical form they are diagnostic of rheumatic infection; they denote a severe grade of the disease, being extremely rare in the absence of heart infection and common in association with pericarditis; the course they follow forms a rough guide to changes in the diseased heart. The frequency of subcutaneous nodes is probably lessening, and perhaps, with improved control of the infection, their development is hardly of quite such grave import as it was. Occasionally nowadays a small crop of nodes may develop without any obvious exacerbation of the infection, and children will survive an attack of rheumatism in which scores of acute nodes have been present. The larger type of node which Cheadle regarded as "almost equivalent to a sentence of death" is now rare, but chronic nodes remaining for weeks and months are still seen; the ultimate outlook in both these types remains grave. Thus a rheumatic child showing nodes is suffering from a serious form of the infection and while they persist is in danger, immediate or ultimate.

Pleurisy and pneumonia.—Pneumonia in acute rheumatism, including the peculiar phenomenon described as the rheumatic lung by A. E. Naish, arises as a secondary result of congestion and compression of the lung by the enlarged heart. Pleurisy on the other hand may result as an extension of rheumatic pericarditis and thus be a truly rheumatic inflammation. Impressed by the fact that exposure to cold is an exciting factor in both pneumonia and rheumatism, Cheadle surmised that "probably many of the simple pleurisies and pleuropneumonias we see ... would be found, on careful inquiry, to be of rheumatic origin"; but this has not become accepted.

Rashes.—Erythema nodosum and purpura rheumatica are not to be regarded as true rheumatic manifestations in spite of their frequent association with tonsillitis and quasi-arthritis as Cheadle termed it. This has been recognised for many years though it has been slow to pass into common knowledge. That they are outside the rheumatic picture is shown by the fact that they are hæmorrhagic lesions associated with a minimum of symptoms which can be counted as rheumatic, whereas in true rheumatism hæmorrhages occur only in the severest types. That both may at times be seen in association with true rheumatism is only to be expected, since tonsillar infection is common in all three conditions. Erythema marginatum, on the other hand, may certainly be accepted as essentially rheumatic and is of special interest now that the part played by allergy has come under discussion. Of all rheumatic manifestations it is the one which most closely resembles an allergic phenomenon, and the one of least clinical significance. It comes and goes at any time before, during or after an attack, and appears to have no obvious connexion with alterations in the activity of the infection. For what it is worth, this is an argument against the view that allergy plays an important part in the production of rheumatic lesions.

THERAPEUTIC PROBLEMS

The theory on which the use of salicylic-acid derivatives in acute rheumatism should be based has been the subject of interminable discussion. It is said that although in some phases of juvenile rheumatism salicylate appears to have a definite antirheumatic action, seemingly bactericidal, in other phases its results are too disappointing to allow of such an explanation. At one time some held that its use was actually dangerous, since it served only to mask without subduing the activity of the disease; and others attributed to it the albuminuria, anæmia and the mental and cardiac depression which are so commonly the effects of the disease itself. Probably most informed opinion would nowadays subscribe to R. Lightwood's description of its use as that of a hosepipe not quite long enough to extinguish the conflagration. Nevertheless in practice salicylate is widely accepted as an antirheumatic drug and is even used as a therapeutic test in diagnosis. As long as a discreet silence is maintained about the theory underlying its use it is employed by everyone without hesitation as an antirheumatic remedy.

Much of the difficulty arises from a failure to think out precisely what a specific antirheumatic remedy would be capable of accomplishing in juvenile rheumatism and what would be its limitations. Setting aside the tendency towards recrudescences and relapses, symptoms may be produced by acute inflammatory interstitial processes or by the persistent poisoning of the parenchyma of the organs, notably of the heart and probably of the brain. Evidently the effect of an antirheumatic remedy would be at a maximum in the first and at a minimum in the second set of symptoms. Is this not in line with what is observed in the salicylate treatment of rheumatic infection? In the acute febrile phases of the disease, whether in the tonsils, joints or heart, the drug acts as though it were controlling the activity of the infection: the temperature falls, the local lesions subside and arthritis ceases to develop in fresh joints. That this satisfactory result is due to the drug seems confirmed by the frequency with which recrudescence follows its premature withdrawal. But in the more chronic cases, especially where the child is saturated with the poison of the disease and the muscle cells of the heart are degenerate, it is not to be expected that the antirheumatic action of any drug will produce much in the way of an immediate improvement. The action of salicylate is further handicapped by its irritant effect on the stomach, especially in cases already predisposed towards vomiting by the presence of severe cardiac dilatation. The sulphonamide derivatives fail to control the acute phases of rheumatic infection once established. This fact is of theoretical interest to those who accept the streptococcal causation of the disease.

Pathological Problems

The pathological changes in juvenile rheumatism are known; it is with their interpretation that we are here concerned. The pathology of the disease confirms the physician's view of it as a generalised infection. The signs discovered at autopsy—the pericarditis and endocarditis, pleurisy, periarthritis and synovitis, with perhaps nodes under the skin and in the pericardium—all suggest an infection by some agent disseminated through the blood-stream. After making every allowance for the peculiar nature of the disease process, there seems no valid argument against this straightforward explanation. The histological lesions have been regarded from the first as the tissue-reactions to the infecting agent of rheumatism, but owing to their difference from the changes found in other infections this explanation has been called in question. Yet no alternative seems acceptable; for wherever rheumatic lesions are found their peculiar histology is the same, whether we examine the macroscopic lesions which seem so patently the results of infection or the hidden changes in the myocardium. By what route are the valves infected? Are we still to be bound to the belief that, after some preliminary damage to the valve, the endocarditis is set up from the blood within the chambers of the heart rather than through the coronary circulation? The evidence supporting the first and older alternative is well known, though it has been weakened by recent experiments demonstrating the precise distribution of the coronary blood-supply; but it is not on the face of it a likely explanation, and the appearance of a mitral valve recently infected for the first time does not support it. A preferable presumption is that the valves, like the myocardium, are infected through the coronary circulation.

Bacteriological Problems

In 1898 Poynton and Paine began to investigate the bacteriology of juvenile rheumatism. In searching for the bacillus which Achalme in 1891 had claimed to be the causal agent of the disease, they found instead a minute diplococcus which grew artificially in chains and was apparently identical with one already being studied in the same connexion by Wassermann in Germany. Poynton had been originally attracted to the study of juvenile rheumatism because of all the disorders then labelled as rheumatic this seemed to be the disease in its purest form; and no doubt he expected its bacterial cause would be recognisable outside the body as proper to that disease: in the language of those days a specific disease would be caused by a specific micro-organism. In view of this it was natural that the peculiarities of the diplococcus (rather than its similarities to a streptococcus) should be emphasised, especially as it produced non-pyogenic lesions; and thus it became labelled *Micrococcus rheumaticus*. Consequently when later bacteriologists reported that such an organism was not only hard to find but when found was in no way different from a *Streptococcus viridans*, its claims to be the causal agent of acute rheumatism were pronounced void.

The first objection to it is, of course, fundamental; if the streptococcus is really found so seldom in connexion with acute rheumatism that it cannot be regarded as significant, then the cause of the disease remains unknown. But after all these years it seems impossible to continue to adopt this attitude: the same positive results have been obtained too often by too many investigators. Streptococci have been obtained in cases of rheumatism during life and after death, and that they should even rarely be found in the cerebrospinal fluid in chorea, or in the interior of a subcutaneous node, is bound to impress the physician; and since the acute septicæmic phases are uncommon and transient, he is ready to regard one positive as outweighing many negative results. It seems, therefore, impossible to deny any association between acute rheumatism and streptococcal infection. It follows that problems of identity, classification and specificity of the streptococcus are of subsidiary importance: formidable as they are, they do not necessarily disprove the truth of the streptococcal hypothesis. That the streptococcus of rheumatism cannot be morphologically distinguished from streptococci which are normally present in the alimentary tract presents no great difficulty. The powerful influence of environment in predisposing to juvenile rheumatism, and the repeated relapses associated with fresh tonsillar infection, are in line with the possibility that the organism is a normal inhabitant of the body. In spite of its clear-cut clinical features the disease does not suggest the fortuitous meeting of a child with some entirely foreign microbe. A second difficulty is that the streptococcus isolated from a case of rheumatism cannot be distinguished from that obtained from endocarditis lenta, and that experimentally it will often set up endocarditis of the malignant type rather than of the simple rheumatic type. This difficulty is not to be explained away on the basis of mistaken clinical diagnosis, but it may easily be within the capacity of the same micro-organism to set up either type of endocarditis. Coombs held that the type of endocarditis depended not so much on the type of micro-organism as on the route by which the valve becomes infected. "Possibly," he wrote in 1926, "the same streptococcus may excite at one time an acute rheumatic pancarditis, at another a slowly progressive endocarditis, invading the whole of the cardiac tissues by way of the coronary supply in the one, but attacking only the endocardial surface, which it has reached from the cardiac cavities, in the other." This contention, which serves well to bridge the difficulty, was the result of a long study of the histology of rheumatic carditis and of the embolic lesions of endocarditis lenta. It deserves more consideration than it has received.

The chief objection urged against the streptococcal hypothesis at present is concerned with the peculiar formative histological lesions found in rheumatism. How do these conform to the idea of a streptococcal origin for the disease? Coombs studied the histology of experimental rheumatism induced by the injection of streptococci grown from human rheumatism. His conclusions, published in 1912, were to the effect that differences in the histological pictures in experimental and human rheumatism were not more than could be accounted for by the difference in the mode of production of the two conditions—the first being produced by a massive dose given all at once, and the second by a series of comparatively small doses. He found that lesions of experimental rheumatism included "all the phenomena, even the submiliary nodule, found in the rheumatic lesions of man." In 1926 he briefly reaffirmed his belief. In endocarditis lenta, Coombs found that, as in rheumatism, a reaction "predominantly formative" may be seen both in the infected valve and the embolic lesions of the disease. He laid stress on this as contrary to the widespread impression that reactions to streptococcal infection must always be suppurative.

Surveying the present position of the streptococcal hypothesis, the evidence that the streptococcus found in rheumatism is in causal connexion with the disease may be taken to be sufficient. But this does not as yet provide us with a simple solution to what might be expected to be a simple problem: some factor seems to be eluding us. It has been suggested that a virus infection may be at work in association with the streptococcal infection, or indeed alone; but as yet the evidence in favour of any virus infection is far too meagre to be of weight, especially when the total lack of immunity conferred by rheumatic infection is borne in mind. Again, a possible allergic factor has been much discussed, emphasis being laid on the silent period commonly observed between the initial tonsillitis and the acute systemic symptoms of rheumatism. It is not easy to realise what part in the disease is claimed for allergy; it can hardly be regarded as predisposing to fresh invasions of the blood-stream, or as responsible for the pathological lesions of the disease. But that is not to say that allergy plays no part in the production of rheumatic manifestations. The allergic character of rheumatic erythema has been mentioned, but its peculiarities do not encourage the belief that allergy is an important factor in producing an acute attack of rheumatism. On the other hand it still seems unlikely that a streptococcus which breeds so true in the medium of the human body should continue indefinitely to escape recognition by bacteriological methods, and it is to the perfection of these that we must look for the complete solution of the bacteriological problem. Thus to accept the streptococcal hypothesis as true does not imply that it has yet been proved to express the whole truth, although there are not lacking signs that ultimately it will attain even to this position. Three general considerations favour this hope: it has lived for over forty years (no inconsiderable life for even a scientific "fact"); not only is it without competitors but it has formed, and still forms, the basis of nearly all laboratory research on acute rheumatism; and the younger generation of physicians, unmindful of past controversies, accept without difficulty juvenile rheumatism as a streptococcal disease and allow this view to influence their treatment.

Public-health Problems

In attempting to control widespread juvenile rheumatism in this country we have at least one important indication to follow up: the class-incidence. At the same time we must bear in mind the importance of tonsillar infection. Can a relationship be established between this and the class-incidence of the disease?

Class-incidence.—Juvenile rheumatism is massed among the children of the poor and is limited to them to a peculiar degree—far more strictly than is, for instance, pulmonary tuberculosis. However investigated, and it has been tested in various ways by many workers, this fact is always substantiated†; so that the social status of the child is a predisposing factor of predominant importance.

The upper limit of the rheumatic stratum in children seems to coincide with, or to be slightly above, the social status of those attending the elementary day-schools; its lower limit is much more indefinite. J. Alison Glover has claimed it as a poverty disease in the strict sense,

† Since this lecture was prepared J. N. Morris and R. M. Titmuss (*Lancet* 1942, ii, 59), substantiate this from an investigation of the social background of juvenile rheumatism based on a study of its morbidity and mortality.

increasing in frequency as the depths of poverty are approached, but investigations undertaken from the voluntary hospitals have invariably shown it to be more rife in the upper and middle classes of the poor than in the very poorest. This point is not unimportant. Were juvenile rheumatism strictly a poverty disease it might well be connected with all the concomitants of dire poverty without distinction: but if, as seems to be the case, destitution, underfeeding, overcrowding and general squalor are not factors of predominating weight, we must look for some special predisposing factor compatible with comparative poverty to explain the peculiar class-incidence of the disease.

Environment.—The paramount importance of environment, suggested by the class-incidence of juvenile rheumatism, is conclusively proved by the investigations undertaken for the Medical Research Council's report of 1927. These consisted of the examination of four poor-law residential schools filled with about 1800 children from the rheumatic stratum of the juvenile population. Had these children continued to live in their own homes it is practically certain that 2–5% of them would have developed rheumatic heart disease by the time that they were due to leave school; yet the mere removal of them from their homes virtually abolished this danger, and over a period of years the incidence of rheumatism was found to be hardly greater than in the schools of the well-to-do.

As the class-incidence shows, the experience of these residential schools is not to be attributed solely to an escape from destitution; and it is in itself sufficient to direct special attention to the housing and schooling of the children of the poorer classes. Juvenile rheumatism is particularly a disease of industrial cities, as opposed to residential towns or rural areas, and it tends to be specially prevalent in low-lying districts in proximity to water-courses. This latter point brings to mind the traditional association between rheumatism and damp, which is further supported by the geographical, climatic and seasonal incidence of acute rheumatism. Probably its prevalence near rivers is more directly influenced by the condition of the house itself than that of the site, as is suggested by the freedom from rheumatism of certain well-known riverside public schools; but houses for the poor tend to be built on cheap and ill-drained sites, and although it is true that an architect can build a dry house on any damp site, this cannot be done cheaply. Many slum areas consist of old but decently built houses which have only become damp through ill-usage and dilapidation; but the better-class poor among whom juvenile rheumatism is particularly rife for the most part live in small houses, looking comparatively respectable, but badly built without basements on cheap sites. A large proportion of these are damp and cold, and cannot be kept otherwise without a consumption of fuel beyond the means of the tenants.

To prove the influence of damp homes in predisposing to juvenile rheumatism is difficult, but it is known that the disease is particularly prevalent in families living in basements, and to a less degree in ground-floors of houses without basements. Attempts have been made to compare the proportion of damp homes in rheumatic and non-rheumatic families. Such an inquiry was made from the Rheumatism Supervisory Centre attached to the Paddington Green Children's Hospital. In it only first attacks of rheumatism were investigated; the controls consisted of non-rheumatic families and not merely families containing a non-rheumatic child; and a strict standard of damp was taken, such as mildew in bedrooms. With these precautions damp in the home was found to be nearly twice as frequent in the rheumatic (57·5%) as in the control series (30%). As there is no recognised standard of what constitutes "damp" in a house it is difficult to compare these results with those of other investigations undertaken in London, Glasgow, Birmingham, Bath and Bristol. In none of these were the differences between the two sets of figures as great as those in Paddington, and in some they were regarded as statistically insignificant; yet it seems at least rationally significant that in every investigation the results pointed in the same direction.

The same point may be also investigated by the construction of rheumatism maps in towns, but this method has as yet hardly yielded much definite information. In Paddington the area which seems to be most infected is far from being the poorest or most overcrowded in the borough, but it lies between a canal and an underground river.

Considering the difficulty of the subject the evidence that damp houses predispose to juvenile rheumatism is at least suggestive, and this view gains in attractiveness when it is borne in mind that some special factor in connexion with poverty is needed to explain the peculiar class-incidence of the disease, as has already been pointed out. Further, it is arguable that the same housing factor affords an explanation of the relationship between tonsillar infection and the class-incidence of juvenile rheumatism. It may well be that, compared with the overcrowded living-room of the slum dweller, the cold unaired rooms of the badly built houses of the better-class poor are the more likely to predispose to tonsillar infection and juvenile rheumatism.

Schooling.—The attendance of the children of the poor at the elementary day-schools is under compulsion, and this bears hardly on the physically subnormal child, particularly on the rheumatic child whose attendance may need to be irregular. Further, from the point of view of exposure to damp and cold, it is impossible to overlook the difference between the well-shod and well-dressed children of the rich with facilities for changing and drying wet clothes at their day-schools, and the conditions obtaining in the poorer classes.

Tonsillar infection.—Chronic infection of the tonsils as a factor in the production of juvenile rheumatism is well recognised. In the Paddington figures only 11% of rheumatic children showed normal tonsils.

Heredity.—It is questionable if hereditary predisposition plays the important part assigned to it by earlier writers. The clearer recognition of environment as an important factor in the production of juvenile rheumatism tends to minimise the influence of heredity; and the experience of the poor-law residential schools shows that hereditary predisposition is in practice no bar to prevention of the disease.

Other factors.—Dietetic factors appear to play no important part in predisposing to juvenile rheumatism. The influence of geographical factors, as shown by the world distribution of the disease, presents interesting problems on which further information is required. They are, however, outside the scope of these lectures.

PREVENTION AND CONTROL

Juvenile rheumatism is found among the children of the poor, attending elementary day-schools under compulsion, and showing chronic tonsillar infection. The basic measures needed for prevention are sociological rather than medical: to raise the standard of living of the poor in general, and to improve housing conditions in particular. So far public opinion in regard to housing has hardly advanced beyond the idea of slum-clearance. The Royal Institute of British Architects, whose assistance in this matter is gratefully acknowledged, published in 1929 a *Report on Damp Houses* which made depressing reading at a time when new houses for the poor were being built in such great numbers. Investigating a series of damp houses of various types, all of which were less than ten years old, it was found that, excluding damp due to faults of maintenance, the damp was due to porosity or faulty construction of walls in 40·1%, and to absence of, or defects in, damp courses in 32·6%. It was pointed out that "all codes of building by-laws, and the conditions on which certain relaxations of by-laws have been permitted, are alike in calling for an adequate damp course, consequently its absence in new buildings must imply failure to comply with this by-law, while defects arise from improper compliance or the use of damp course materials of inferior quality." The comment was passed that this state of things in new dwellings was surprising; and the Report recommended that "the erection of dwelling-houses should be subject to stricter technical supervision, whether by architects engaged to supervise the work or by properly qualified officers of Local Authorities."

Three considerations favour the prevention of juvenile rheumatism: first, acute rheumatic infection has lessened materially in severity in the last 50 years, as the decrease in frequency of the three most serious manifestations of the disease shows. Hyperpyrexia,

always rarer in children than adults, has now virtually disappeared at any age; pericarditis which in 1880 was found in about 13% of inpatients with acute rheumatism had decreased to 5% by 1914, and is no doubt considerably less common now; subcutaneous nodes, so closely associated with pericarditis, seem also to be less in evidence than they were 30 years ago. If the disease is steadily diminishing in severity it almost necessarily must be diminishing to some extent in frequency. These encouraging results may be attributed to improved social conditions, a better appreciation of the clinical aspects of the disease, and the routine use of the salicylic-acid derivatives. Again, the infection shows a distinct prodromal stage; it is rare for an attack of serious rheumatism to develop suddenly in a child—in most instances the catastrophe has been preceded by months of rather indefinite ill health with sore throats, muscular pains and symptoms of nervous instability the significance of which has been overlooked or misinterpreted. Removal of tonsils, too, assists our efforts to control juvenile rheumatism and its more serious results. Better supervision could be ensured by notification, attention to housing details, special facilities for school attendance, treatment of infected tonsils, establishment of rheumatism supervisory centres, and provision of special beds in heart homes or hospital-schools.

Rheumatism in children under the age of 16 was first made notifiable in the borough of Paddington in 1927, and has since been adopted in a few other localities. Worked in conjunction with some special scheme for the supervision of rheumatic children it is of value; but it fails to provide a complete return of all cases of rheumatic heart disease in the district because only acute phases of the infection can legally be made notifiable. The assistance of a sympathetic medical officer of health is in practice of more value than the notification of the disease. School arrangements for rheumatic children may need modification; the necessity for irregular attendance or even, as a temporary measure, for half-day attendance may be represented to the authorities, and experience shows that it is usually sympathetically considered. No doubt it is the wish of all concerned that attendance at school should do good rather than harm. On an altogether different footing comes attendance at the special day-schools for physically defective children. These "PD schools" are of the greatest value to rheumatic children. Those attending them are driven to school and back, they are rested and fed during their school-hours, and their whole regime is beneficial and free of the dangers of attendance at ordinary elementary schools. Open-air special schools are as a rule unsuitable for rheumatic children.

The closeness of the relationship between tonsillar infection and juvenile rheumatism in all its phases can hardly be over-emphasised. The figures obtained at the Paddington Green Children's Hospital demonstrated that 89% of rheumatic children showed infected tonsils, and that the chance of spontaneous cure was well under 5%, and limited to such cases as had shown no more than a single attack of acute tonsillitis. Thus the call for the removal of diseased tonsils can hardly be questioned on theoretical grounds. In practice the value of this procedure is shown not so much by the prevention of further attacks of rheumatism as by the modified severity of the infection, so that danger to the heart is much reduced; indeed it may be claimed that it is exceptional for permanent heart disease to develop for the first time in a tonsillectomised child. Thus, in a series of children admitted for rheumatism to the Paddington Green Children's Hospital, all of whom showed infected tonsils, the incidences of chorea, arthritis and active carditis were 40%, 52% and 50%. In the same children readmitted for relapses of sufficient severity to need inpatient treatment, these figures for the same manifestations of rheumatism were 78%, 5% and 5%, that is to say, the relapses consisted largely of uncomplicated chorea. The same phenomenon is seen in the rheumatism of tonsillectomised children taken as a whole. That this is no mere chance is suggested by the fact that in children with completely healthy tonsils, uncomplicated chorea is the main symptom. In the well-known figures compiled in America comparing the illnesses of tonsillectomised children with those in children for whom tonsillectomy had been advised and refused, the most significant difference is the drop in the percentage of acquired heart disease in the tonsillectomised group. Lastly, the freedom from spontaneous tonsillitis enjoyed by tonsillectomised rheumatic children, and the smoothness and rapidity of their convalescence from acute attacks, suggest a significant modification of the infective process. Thus removal of diseased tonsils in juvenile rheumatism is both theoretically and practically a correct procedure. Operation should therefore be resorted to where the state of the heart permits, and expert assistance for this purpose should be at hand wherever the care and treatment of rheumatic children are undertaken. The success of operative treatment is, of course, likely to be greater in early than late stages of the disease.

Rheumatic children need more special supervision than is possible in an ordinary outpatient department; in particular they require repeated surveys to see that they are keeping well. Hence special rheumatism supervisory centres have been established to which the patients are summoned for periodic re-examination. To prevent heart disease it is essential to attract early cases of rheumatism to the supervisory centre, and the word "rheumatism" should therefore appear in the name of the centre. The public need teaching that rheumatism is the cause of heart disease in children, and to use the term "cardiac clinic," which conveys little to the minds of the poor, is to defeat the object of the scheme. The physician in charge must be content to supervise children in the earliest stage of rheumatism, the majority of whom show no evidence of established heart disease. The centre must be capable of dealing with every phase of juvenile rheumatism, from the removal of tonsils to the treatment of severe acute attacks, and it is therefore ideal for the centre to be a special department of a children's hospital. The first of these centres in London was opened in October, 1926, and in 1938 there were about 20 such clinics at work, many of them attached to metropolitan children's hospitals or under the management of the London County Council.

The centre receives patients from the wards and outpatient departments of the hospital for supervision during quiescent phases of the disease, as well as from school medical officers, private practitioners and the medical officer of health. It reports complaints of housing conditions to the public health authorities, makes special arrangements for school attendance, issues instructions to parents on the care of their children, treats all phases of the disease and makes recommendations for lengthy inpatient treatment if required. The cost of such a centre is low, and it can be organised to deal with a large number of patients. Judging by 10 years' experience in charge of such a centre, the results obtained are satisfactory, and real deterioration in the cases under supervision is surprisingly rare.

Facilities for inpatient treatment, combined with education, in heart homes and hospital-schools for children with rheumatic heart disease have been provided both by charitable funds and by municipal hospitals for chronic cases, where these children can be suitably cared for in conjunction with long orthopædic cases. The cost of treatment on these lines is great so that only selected cases can be accepted; nevertheless valuable results are obtained. It might be hoped that lengthy treatment would not only improve the cardiac condition but help to establish immunity against further attacks on returning home. How far these hopes have been fulfilled is uncertain, but failures are not unknown. It does not seem that these special facilities can replace the work of ordinary hospitals nor of supervisory centres, but they are needed to deal with the more severe examples of juvenile rheumatism and to give them their best chance of improvement or recovery.

THE ARCHITECT AND THE HOSPITAL.—The Bristol and District Divisional Hospitals Council, in coöperation with the replanning advisory committee of the Bristol Incorporated Chamber of Commerce and Shipping, have arranged for Mr. Charles Elcock, FRIBA, to give a lecture on the future of health and hospitals from an architect's point of view. The lecture will be held in the physics lecture theatre, Royal Fort, University of Bristol, on Friday, Nov. 27, at 2.30 PM.

SULPHONAMIDE SENSITISATION

DAVID ERSKINE, MD LOND, DPH
MEDICAL OFFICER TO THE VENEREAL DISEASES AND DERMATOLOGICAL DEPARTMENTS, GUY'S HOSPITAL; DERMATOLOGIST EMS

THE oral administration or local application of a sulphonamide compound may be attended by various manifestations of intolerance, which may be due to a direct toxic action of the drug or to some form of sensitisation. The sensitisation phenomena are of several types. Reactions are occasionally encountered early in treatment, sometimes possibly as a result of the liberation of toxins from some chronic infective focus and sometimes on account of an acquired "allergy" to sulphonamides from some previous administration of the compounds. Many writers have reported photosensitisation during treatment, but the reaction most commonly seen is an "allergic" sensitisation which develops between the eighth and tenth day of medication and may persist for long periods unless the condition is recognised and controlled. The incidence of this allergic sensitisation does not appear to be in any way associated with an allergic family history and depends more on the duration of chemotherapy than on the total dosage administered. Salvin (1937) and others have reported positive patch tests, but this local reaction appears to be unreliable and is not always obtained.

Immediate symptoms of intolerance are often experienced during the first 48 hours of treatment and may cause depression, headache, nausea and vomiting; they tend to become less troublesome as medication continues beyond the second day. Serious toxic effects of the drugs on the hæmatopoietic system have mostly been reported after prolonged administration of the drugs with a total dosage of over 50 g. The so-called "drug-resistance" sometimes caused by inadequate dosage may on other occasions result from some type of sensitisation.

An immediate toxic effect is occasionally encountered at the beginning of treatment in certain chronic cases, thus an erythematous or maculo-papular rash may develop locally early in the sulphonamide treatment of a chronic abscess. Barber (1941) has described early sensitisation of this type during the treatment of lupus erythematosus; the patients experienced severe nausea, vomiting and diarrhœa with considerable malaise and pyrexia, and some developed a generalised scarlatiniform eruption during the first 48 hours of administration. The condition may possibly be the result of the liberation of toxins into the circulation from the therapeutic effect of the drug on some chronic infective focus. The occurrence can be largely prevented by recognising the possibility of reaction in such cases and beginning sulphonamide medication with small doses and increasing to a more effective dose in the second or third day; this procedure is not justifiable, or necessary, in acute cases as it is likely to lead to drug resistance. In this way, presumably, a flooding of the system with liberated toxins is prevented for therapeutic effects can thus be obtained without severe general reactions in this type of case.

Light sensitivity, or photosensitivity, is not infrequent during sulphonamide therapy and it is now recognised that excessive exposure to sunlight should be avoided as far as possible during chemotherapy. The condition occurs as an erythemato-vesicular eruption on the exposed parts of the body. In my experience the rash usually appears during the first week of treatment and has often been associated with evidence of liver damage; in some cases there has been an excessive urobilinuria and a positive van den Bergh test and the drug has therefore been discontinued. Park and Platts (1942) have recently reported cases of photosensitisation in which it has been possible to continue medication without ill effects if further exposure to sunlight is avoided, and some of their cases have received further treatment with sulphonamides later without developing evidence of light sensitivity, although exposure to sunlight was not restricted. Newman and Sharlit (1937) reported cases of light sensitivity which relapsed on further exposure to sunlight even though no further sulphonamide was given.

The most common sensitisation to sulphonamides is an allergic type of reaction which usually appears between the eighth and tenth days of treatment, but occasionally may not develop until the fourteenth day. The condition resembles serum sensitivity both in the time of onset and in the type of reaction. It may occur as "drug fever" with malaise and pyrexia, but this is not invariable, and there may or may not be a skin eruption, nausea and vomiting. Various types of skin rash are seen (Erskine 1939a); these tend to be generalised and may be urticarial, morbilliform, scarlatiniform or rarely purpuric; an eruption resembling erythema nodosum is probably the most frequent type seen during medication with sulphathiazole. Similar eruptions may appear at this time with evidence of drug retention and do not seem to be true sensitisation phenomena; it is important that the two conditions should be differentiated, for the sensitisation reactions clear much more rapidly on desensitisation by continued therapy and later complications can be prevented, whereas the type with drug retention call for cessation of chemotherapy to prevent an increase in symptoms and toxic effects. Werner (1939) described a simple test to demonstrate sulphonamide excretion in the urine, and this test may be utilised to differentiate the two types of reaction occurring about the eighth day of sulphonamide treatment. With "allergic" sensitisation sulphonamide excretion is normal, but with "drug retention" Werner's test shows reduced excretion by a negative or weakly positive test, and there is often albuminuria and sometimes well-marked urobilinuria.

Werner's test.—1 c.cm. of urine is diluted 10 times in a test-tube and a few drops of Werner's solution (3% *para*-dimethylaminobenzaldehyde in 7% sulphuric acid) are added. A flavine yellow colour develops immediately in the presence of sulphonamide. An estimation of the efficiency of excretion can rapidly be obtained with a little experience of the test in the routine examination of urines from patients taking varying doses of sulphonamides. Diminished excretion and probable drug retention results in negative or weakly positive tests, the latter showing a very pale yellow colour change on adding Werner's solution, as opposed to the strong flavine yellow colour obtained in normal excretions.

When there is drug retention, sulphonamide treatment should be discontinued and elimination assisted with fluids by mouth and saline diuretics. When the sulphonamide excretion is normal, administration should be continued with care in the same or reduced dosage for 48 hours with the object of desensitising the patient. This continuation of therapy should only be attempted when the patient is under continued observation so that any exacerbation can be immediately controlled, and a blood-picture should be examined whenever possible in view of the remote possibility that a severe granulocytopenia may develop at this stage. Continuation of the drug may be advisable in view of the desired therapeutic effect, but it is also of considerable importance to desensitise the patient whenever possible because of the extensive use of these drugs for so many common illnesses and the fact that a patient developing sensitivity of this type may remain allergic for a long period. Sometimes the first tablet given months later may provoke an immediate return of the dermatitis with general symptoms and these reactions may occasionally be of an alarming nature. I have previously reported a case (Erskine 1939b) in which one 0·5 g. tablet of sulphapyridine given twelve months after the original sensitisation caused œdema of the larynx. Delayed reactions have not been observed when desensitisation was undertaken at the time of the reaction.

If chemotherapy is restricted, whenever possible, to a seven-day period the incidence of allergic sensitivity is considerably reduced and I have encountered but few cases since recognising this factor three years ago.

Sensitivity is liable to develop with any of the sulphonamide drugs and there is little evidence that any particular compound is less likely to cause reactions. The condition almost invariably appears between the eighth and tenth days of treatment and most cases appear to depend more on this time factor than on the total dose employed. Very occasionally, delayed reactions appear up to 48 hours after chemotherapy has stopped, so that administration for more than six days makes allergic sensitivity a possibility. It is important to recognise that absorption from local applications as well as oral or parenteral administration may lead to sensitisation phenomena.

SUMMARY

The incidence of sulphonamide sensitisation may be minimised if (1) medication is restricted to 7 days or less whenever possible ; (2) small doses are used initially for certain chronic infections associated with a chronic infective focus ; (3) desensitisation is undertaken immediately if eighth day "allergic" sensitisation is encountered ; and (4) exposure to sunlight is restricted during chemotherapy.

The drug should be withheld if Werner's test indicates drug retention.

In cases with photosensitisation recent work suggests that the drug may safely be continued if further exposure to sunlight is avoided.

REFERENCES

Barber, H. W. (1941) *Brit. J. Derm.* **53**, 1, 33.
Erskine, D. (1939a) *Brit. med. J.* ii, 104 ; (1939b) *Brit. J. Ven. Dis.* **15**, 260.
Newman, B. A. and Sharlit, H. (1937) *J. Amer. med. Ass.* **109**, 1036.
Park, R. G. and Platts, W. M. (1942) *Brit. med. J.* ii, 308.
Salvin, M. (1937) *J. Amer. med. Ass.* **109**, 1038.
Werner, A. E. A. (1939) *Lancet*, i, 18.

ASCORBIC ACID IN MEALS AT BRITISH RESTAURANTS AND SCHOOL CANTEENS

R. G. BOOTH
PH D READING
RESEARCH ASSOCIATION OF BRITISH FLOUR-MILLERS

G. V. JAMES
M SC, PH D LOND, F I C
ROCHE PRODUCTS LTD

J. R. MARRACK, M D CAMB
HAYMEADS EMERGENCY HOSPITAL

W. W. PAYNE
M B LOND, M R C P
HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET

FRANK WOKES
PH D, B SC LOND, F I C
OVALTINE RESEARCH LABORATORIES

THE Hertfordshire County Council has been exceptionally active in the organisation of school canteens and British restaurants. One of the centres opened on Sept. 18, 1939, claims to be the first to cater for children from the evacuated areas. Early in this year there were over 100 feeding centres extending to the schools of the more remote villages. These communal meals are, therefore, playing an important part in the nutrition both of schoolchildren and the general population, and the adequacy of the meals is of practical importance. This report deals with the amount of vitamin C provided.

The investigations were made in three areas ; the first includes centres A to F, the second centres G to M, and the third centres N to R. Three periods were covered : at centre A the meals were examined mainly during a time when vegetables were scarce ; at centres B to M during an intermediate period ; and at centres N to R when early green vegetables had become abundant (table I).

TABLE I—ASCORBIC ACID IN MEALS AT 18 FEEDING CENTRES

Centre	People served	Meals examined	Period	Ascorbic acid per meal (mg.) Mean	Ascorbic acid per meal (mg.) Range	Garden
A	Ch. and ad.	9	Feb. 23–May 2	18·8	4·5–45	no
B	Ch.	3	April 14–17	30·0	10·5–65·5	yes
C	Ch.	3	April 14–17	16·0	9–21	yes
D	Ch.	6	April 14–17 April 27–30	16·3	8–34·5	yes
E	Ch.	4	April 20–24	24·5	9–36	yes
F	Ch.	4	April 20–24	8·0	3–11	yes
G	Ch.	3	April 27–30	27·4	9·4–34·4	yes
H	Ch. and ad.	3	April 27–30	9·35	5·3–15·6	no
I	Ch.	3	April 27–30	24·6	20·4–33·5	yes
J	Ch. and ad.	3	April 27–30	13·6	9·3–16·0	no
K	Ch.	3	April 27–30	15·6	4·95–31·4	yes
L	Ch.	3	April 27–30	18·0	8·2–22·0	no
M	Ch. and ad.	3	April 27–30	9·3	5·1–13·6	no
N	Ch., junior	4	May 4–7	19·5*	18·2*–26·75	no
	Ch., senior	4	May 4–7	22·6*	21·8*–27·6	..
O	Ch.	3	May 4–6	72·3	65–81	yes
P	Ch., higher est.	3	May 4–7	44·9	23·6–60	no
	Ch., lower est.	2	May 4–7	25·4	9·5–41·4	..
Q	Ch. and ad.	3	May 4–7	55·0	28·3–73·7	no
R	Ad.	3	May 4–7	42·2	33·2–59·2	no
A–F	..	..	..	18·4	..	..
G–M	..	..	..	16·8	..	..
N–R	..	..	..	41·0	..	..

* The ascorbic acid in raw cabbage and beetroot, served on May 4, is not included in these estimates.
Ch. = children ; ad. = adults ; est. = estimate.

TABLE II—ASCORBIC ACID IN VARIOUS VEGETABLES AND VEGETABLE DISHES

—	Meals at which served	Wt. of helping (g.) Mean	Wt. of helping (g.) Range	Ascorbic acid mg. per 100 g. Mean	Ascorbic acid mg. per 100 g. Range	Ascorbic acid mg. per helping Mean	Ascorbic acid mg. per helping Range
Potato ..	65	160	55·5–300	6·12	2·0–14	9·8	1·85–21·7
Greens ..	26	65·3	34–124	34	9–61	22·5	5·2–59·8
Carrot :							
cooked	8	66·5	28–156	3·4	0·64–5·9	2·2	1·0–5·3
raw ..	3	..	24–36·5	..	7–32	..	4·5–13·3
Swede ..	7	105·4	41–186	9·2	7·4–18	9·7	4·0–14
Turnip ..	4	..	16–29	..	5·5–10	..	1·6–2·0
Parsnip ..	3	..	40·5–157	..	2·5–5·5	..	1·1–7·6
Leek ..	3	..	35–97·5	..	12·2–27	..	6–12·9
Beetroot	4	..	35–85	..	4–12	..	2·5–5
Beans :							
black ..	1	..	82·7	..	6·9, 7·4	..	6·1, 5·7
haricot	1	..	121·5, 109	..	2·66, 2·87	..	3·2, 3·1
Pease pud.	1	..	148·5, 145·6	..	16·6, 18·3	..	24·6, 26·6
Peas ..	1	..	46·0, 37·0	..	6·9, 8·1	..	3·2, 3·0
Veg. soup	5	..	162–258	..	under 1–3	..	2–6·2

METHODS

At centres A to F and N to R small weighed samples were put immediately into bottles containing a solution of metaphosphoric acid, or of metaphosphoric and trichloroacetic acids, and the ascorbic acid was estimated as soon as possible. At centres G to M samples were placed in glass jars which were taken to the laboratory in a freezing mixture and then kept in a refrigerator until analysed. The time elapsing between taking and analysis never exceeded 5 hours. Estimations were made by the method described by Chappell (1940), with unimportant modifications. The time elapsing between the end of cooking and the taking of the samples varied. At centres A, B, C and E it was not more than a few minutes. At F it was not more than 10 min. On the first 3 days the samples at D were taken directly the food was cooked. At centre K food was cooked in two instalments ready at midday and 1 PM ; two pairs of samples were taken, one pair immediately after the food was ready at midday and one after 30 min. At centres G to J and L and M only one instalment was cooked and the vegetables were kept hot in pans until wanted. Samples were taken at these centres at intervals up to 100 min. after cooking was completed. At centres N to R samples were taken up to 45 min. after the first meals were served ; but, as noted later, at centre Q this might be a considerable time after cooking was finished.

FINDINGS

Potatoes were served at all meals except one, on a Monday, at centre A ; here it was not possible to peel the potatoes for 600 people in the morning in time for cooking, and it was thought inadvisable to keep them peeled over the weekend. Green vegetables were served more often as the season advanced ; only twice in 9 meals at A ; ten times in 41 meals at centres B to M, but fourteen times in 17 meals at centres N to R. Raw carrot was served three times ; at the school canteens C and M a raw vegetable dish containing raw greens was supplied regularly once a week. At centre G salads were served on Fridays. At school-centre P watercress was served once a week, when in season, in approximately 20 g. portions ; though it was useful when the supply of vegetables was uncertain, it must be remembered that 20 g. will provide only about 12 mg. of ascorbic acid.

There were wide differences between the amounts of ascorbic acid found per 100 g. in different samples of the same type of vegetable (table II) ; these differences were found between samples served at the same centre on different days—for example, 2·5 mg. per 100 g. of potatoes at centre F on April 20 and 6 mg. on April 22. Duplicate samples were taken at 19 of the meals served in the group G to M. The average difference between the amounts of ascorbic acid per 100 g. of two samples of potatoes taken at the same meal was 33·4% of that in 100 g. of the sample that contained the lower amount. In seven instances this difference was under 10% and in four over 50%. Similar differences were found between samples of other vegetables. The number of samples of

potatoes examined was sufficient to justify comparison between the three groups. The means agreed well: group A to F, 5·7; group G to M, 6·4; group N to R, 6·13. These means are rather lower than those found by one of us earlier in the year at a hospital (7·6), at home (7·7) and in school canteens and British restaurants in London (6·7); and definitely lower than the 8 mg. found by Olliver (1940). This was probably because of the lateness of the season. The average amounts found in other vegetables agree well with the figures found by others (e.g., Olliver 1940, Mathews and Bacharach 1941, Harris and Olliver 1942). The lowest amount found in any green leafy vegetable was 9 mg. per 100 g.; this was a sample of thousand-headed kale, cut on a Friday and cooked on the following Monday. The amounts in cooked carrots were, on the whole, below the average found by Olliver (1940); this, again, may have been due to the fact that they had been kept for a long time after being lifted.

At centre A green vegetables were crammed into a string bag and placed in a volume of boiling water, little more than was needed to cover them, in a large boiler. It might be expected that this method of cooking would favour destruction of ascorbic acid, since the vegetables in the middle must be heated up slowly. Unfortunately the studies at this centre were made when green vegetables were scarce and only two samples were examined; but there was no evidence of excessive destruction of ascorbic acid in these two as they contained 10·5 and 38 mg. per 100 g. A further study will be made at this centre in summer. At centre Q the method of cooking was similar, but a wire basket was used instead of a string bag. Apart from this the vegetables at this centre were cooked in instalments from 10 AM onwards and kept in a hot cupboard at 65°–70° C. until needed. The batches put in last were taken out first, so that some batches were not served until over 3 hours after they had been put on to cook. Nevertheless, the sample of green vegetables (kale and sprouting broccoli) taken at this centre contained 57, 17·5, 19, 37·6, 44·5 mg. per 100 g. It is possible that the extreme difference between samples taken on the same day may be due to the long keeping of the second sample.

Nor was there any evidence that the destruction of ascorbic acid, in the samples of vegetables in group F to M, kept hot for a considerable time, was much greater than in samples taken shortly after cooking. The mean value for the 14 samples of potatoes which had been kept hot, over a low gas or in an oven, for not less than 40 min. after cooking was 6·6 mg. per 100 g., while the mean for 25 samples kept for under 40 min. was 6·3. Sprouting broccoli which had been kept hot (commonly on a hot plate with the temperature falling from about 100° C. to about 65° C.) for at least 100 min. contained 14·5 and 15·5 mg. per 100 g. When small samples of vegetables are kept hot on a water bath the loss of ascorbic acid is fairly rapid, though variable; 40% may be lost in an hour. Large samples in covered containers probably lose ascorbic acid less rapidly because oxygen diffuses into the substance more slowly.

In most of the centres vegetables were cooked in dixies; the method did not differ from that used in domestic cooking except that it was on a larger scale. In the smaller schools the dinners were all served within 15 min. of the end of cooking. Large amounts of ascorbic acid are extracted from vegetables by the water in which they are cooked; this is one of the chief causes of loss. This loss could be reduced if a series of batches of vegetables were cooked in the same water (Macrae 1942); and if cooking water were used for making soups and gravies the ascorbic acid extracted would not be lost to the consumers. However, serial cooking would entail difficulties in centres where one batch of vegetables only is commonly cooked. There are practical objections to the use of the cooking water, and it was rare to find that all of it was used.

Most manageresses of communal feeding centres have been impressed with the belief that potatoes lose a large proportion of their ascorbic acid if they are peeled and kept in water overnight. Two of us have tested this belief; one (J. R. M.) found no evidence of loss even if the potatoes were cut in pieces, measuring about 5 by 3 by 3 cm.; the other (G. V. J.) found evidence of a slight loss and of a serious loss in one instance only (table III).

TABLE III—EFFECT OF PEELING, KEEPING AND COOKING ON THE ASCORBIC ACID CONTENT OF 6 SAMPLES OF POTATOES

Potatoes	Ascorbic acid (mg. per 100 g.)					
Raw	18·5	17·1	..	..	..	..
After peeling	16·5	20·0	17·2	8·9	12·8	13·3
Peeled and kept overnight ..	16·0	18·0	13·4	8·3	10·2	13·4
Peeled, kept overnight and cooked	15·8	9·7*	..	..	..	..

* Kept hot for 2 hr. after cooking.

TOTAL ASCORBIC ACID IN THE MEALS

In order to estimate the amount of ascorbic acid supplied by the meals it is necessary to know the size of the helpings. This is not easy. A fair estimate of the size of an average helping of potatoes can be calculated from the total amount supplied and the number served; 14% may be assumed to be wasted with the peel. For example school E used 28 lb. per day for 80 children, and school D 112 lb. per week for 12 small and 25 big children and 4 adults. The size of the average helping so calculated agreed with that found by weighing samples. However, these were small schools where all the serving was done by one or two people; the whole process of serving could be watched and fair samples chosen for weighing. Children's helpings varied with the age—for example, at centre N the average helping for juniors was 144 g. and for seniors 270 g. But there were wide variations not due to age between different centres; thus the average helping over 3 days at centre G which supplied children of all ages was 210 g., but it was only 75·6 g. at centre H which supplied children of all ages and adults. At the centres G to M, where two sample helpings were weighed at most of the meals, the average difference between the weights of two was 29% of the weight of the smaller; in 3 cases the difference was over 50% and in one it was 128%. There were similar wide differences between the weights of helpings of other vegetables, both between duplicates taken at the same meals and between the helpings at different centres. For example, at N the average helping of green vegetables was 34 g. for juniors and 36 g. for seniors; while at school D it was 123 g. Occasionally helpings of carrots and parsnips were unexpectedly large. The differences between the total amounts of ascorbic acid contained in the other vegetables of duplicate samples of meals at centres G to M were less than those between the weights of the duplicate samples of potatoes. The mean difference was 17% and in no instance was it over 40%. The mean total ascorbic acid in the members of each pair that contained the larger amount was 18 mg. and the mean of the other members that contained the smaller amount was 15·5 mg. At school N seniors got 75 mg. in 3 days and juniors 70 mg.

The most striking features is the difference between the series A to F and G to M on the one hand and the series N to R on the other. This difference was due to the fact that green vegetables (mainly kale and sprouting broccoli) were served more often in the last series and that the amount of ascorbic acid in the greens served was larger. A similar contrast can be drawn between schools E and F. The average amount of ascorbic acid derived from a helping of potatoes was nearly 10 mg. (table II). This may be regarded as a constant foundation of the day's supply of vitamin C. A helping of green vegetables usually brings up the total to over 30 mg. With good helpings of swedes or leeks or raw carrots the total is likely to be over 20 mg.; but it is likely to be under 20 mg. if any other cooked vegetable is used to supplement the potato. This does not include vegetables—kohlrabi for example—which are not grown to any great extent. Raw green vegetables are usually eaten in small amounts. In the one meal included in this series at which they were served 21 g. of raw chopped greens supplied 8·5 mg. of ascorbic acid and 21 g. of lettuce another 4·2 mg.

Vegetables for the school canteens were obtained from local retailers, school gardens and (schools B and D) from the gardens of large houses in the neighbourhood. In the series G to M the two schools that provided the most ascorbic acid per meal had gardens. In series N to R

the one centre (O) that had a garden supplied by far the most ascorbic acid, mainly owing to the large helpings of green vegetables. As is shown by the example of schools E and F, the effect of the school garden on the supply of ascorbic acid depends largely on the type of vegetable grown.

A further study was made by two of us (F. W.) and W. W. P.) on 17 meals served at school canteens S, T, V, W and X and British restaurant U, all situated in towns. The schools had no gardens.

Special precautions were taken to ensure accurate estimation. A normal portion of a separate vegetable or of a whole serving for one person was taken while the meal was being served. This was cut up and well mixed on a plate with knife and fork and divided into four approximately equal portions, two of which were examined at an EMS laboratory at Watford and two at the Ovaltine Research Laboratories. Each part was put in a weighed glass jar containing 20 ml. of 25% metaphosphoric acid, prepared on the same day, and at once well mixed by shaking. Samples were brought to the laboratories within one hour and the ascorbic acid estimated at once. Special attention was paid to the accuracy of the estimation. As experience showed that assays of ascorbic acid in foods may be too low owing to incomplete extraction, the solid was ground thrice with sand under metaphosphoric acid solution, the extract squeezed through muslin and the residue ground with further sand and metaphosphoric acid. The resulting extract was made up to a known volume and clarified by centrifuging. The results on coloured solutions were checked by the potentiometric method of Harris, Mapson and Wang (1942). The estimates at the two laboratories agreed well; for example the amounts of ascorbic acid found at the two laboratories in one meal were 26·6 and 27·4.

The first of these estimates was made on May 13, the others on May 21 and during June and July. The amounts of ascorbic acid found in potatoes up to the beginning of July were less than in the series A to R because of gradual loss of vitamin C in old potatoes on storage. After the first week in July new potatoes became available and the average rose to nearly 12 mg. per 100 g. The amounts in green vegetables ranged from 19 to 53 mg. per 100 g. Differences between duplicate samples were similar to those found in the previous series. The effect of keeping hot after cooking was studied at the canteen of an industrial firm. At 11.30 AM the amounts of ascorbic acid in two servings, weighing 140 g., of mixed vegetables (potatoes, greens and carrots) were 18·6 and 21·6 mg. per 100 g., mainly contained in the greens. The amounts in samples weighing 140 g., taken at 1.30 PM when all servings had been distributed, were about one-third less—13·2 and 13·6 mg. The vegetables had been kept on a hot plate at about 80° C.

An attempt was made to check the estimates of the size of helpings by finding the total amount of vegetables used and the number of persons supplied. The amounts of vegetables used per week in May at school S would supply each child with 320 g. of potatoes, 172 g. of greens and 57 g. of carrots per week; actual helpings weighed were potatoes 108, 124, 118 g., greens 38 g. At school T during a week in June the totals would supply each child with 150 g. of potatoes and 62 g. of greens per day, not allowing for waste; these are in fair agreement with the actual samples taken. Greens were served on three out of five days of the week. The largest difference between helpings of vegetables at the same meal was 31%. The average helping of potatoes actually weighed (when these were weighed separately) was only 115 g., and the average total weight of vegetables in a serving 196 g. The amount of ascorbic acid per meal ranged from 0·9 to 29·6 mg.; and averaged 16 mg. up to the end of June. In July, when new potatoes and larger quantities of greens were available, the average amount rose to 48 mg., and ranged from 29 to 79 mg. per meal. As might be expected, the meals showed considerable seasonal variations in their vitamin-C content.

DISCUSSION

In most cases little more ascorbic acid is taken during the day than is supplied in the dinners served at these canteens. A small and doubtful amount is contained in milk and 1 mg. or so may be obtained from meat and jam. The meals should, therefore, meet the whole of the day's requirements. Actually the average amount in the meals, served before vegetables were plentiful, was little over half the standard of 30 mg. proposed by the technical commission of the League of Nations (1938) and regarded by Bacharach and Drummond (1940) as a marginal requirement. If requirement of ascorbic acid is proportional to the body-weight, the dinners may be considered just to meet the requirements of school-children during the transition period before green vegetables are plentiful; during the worst period the amounts supplied are not adequate for children. This can hardly be regarded as satisfactory, but the amounts of ascorbic acid in meals supplied at these centres in Hertfordshire are no less than found at other school canteens and British restaurants, nor than amounts obtained at home. In January, 1941, one of us kept a record of his diet; the average intake of ascorbic acid was 16 mg. per day; in 1942 with more attention to the supply of green vegetables the average was well over 30 mg.

Study of ways to avoid losses of ascorbic acid in cooking suggests that the supply of green vegetables is of considerably more importance than the method of cooking. The difficulty is to get the green vegetables. At centre A it was almost impossible to get any greens from March 16 to April 27. However, abundant supplies of savoys were ready in private gardens by April 3 and the garden of school E was supplying sprouting broccoli in abundance by April 20. The garden of school F was not so well used; it was supplying potatoes right up to April, although potatoes were cheap and abundant, but did not produce any of the early greens. The British restaurants and schools in towns have to depend on market gardeners who as a rule grow vegetables more suitable for transport than sprouting broccoli, savoy or kale.

The supply of ascorbic acid could be increased by eating green vegetables raw. This would, however, solve only one of the difficulties associated with vegetables. The supply of vitamin A from animal sources is fixed at a low level by the rationing of butter, margarine and cheese, the control of the milk-supply during the winter months and the scarcity of eggs. Requirements must be made up from the carotene of green vegetables and carrots. The vitamin A values of the average helpings of green vegetables and carrots are only some 1300 and 6000 international units respectively. The 13 servings of green vegetables and 13 servings of carrots in the 50 meals of series A to M spread out over 50 days would supply only about 1600 IU per day. It would be no more, possibly less, if the vegetables were eaten raw. The supply of green vegetables should therefore be increased in order to provide sufficient vitamin A.

We wish to thank the County Education Officer for his encouragement of this investigation, Miss J. Organ, Ph C, for carrying out many of the estimations, and the staffs of the school canteens and British restaurants for the help and information they provided.

REFERENCES

Bacharach, A. L. and Drummond, J. C. (1940) *Chem. & Ind.* **59**, 37.
Chappell, G. (1940) *J. Hyg. Camb.* **40**, 699.
Harris, L. J. and Olliver, M. (1942) *Biochem. J.* **36**, 155.
— Mapson, L. W. and Wang, Y. L. (1942) *Ibid*, **36**, 183.
League of Nations Technical Commission (1938) *Bull. Hlth Org. L.o.N.* **7**, 460.
Macrae, T. F. (1942) *Nature, Lond.* **149**, 685.
Mathews, D. M. and Bacharach, A. L. (1941) *Brit. med. J.* ii, 226.
Olliver, M. (1940) *Lancet*, ii, 190.

MINISTRY OF HEALTH: WINTER HEALTH CAMPAIGN.—The Ministry of Health, with the coöperation of the Ministry of Information, is launching another winter health campaign, and will renew its attack on the careless cough and sneeze by persistent education on the dangers of droplet infection. H. M. Bateman has produced another set of four cartoons and has chosen for his backgrounds a cinema, a lift, a suburban train and a canteen. A special poster has been designed to stress how the war effort is hindered by the spread of colds and influenza in factory, workshop and office. A flashlight photograph shows the germ-spreading effects of an unguarded sneeze, while a panel points out that time lost every year through colds and influenza is the equivalent in production of 3500 tanks, 1000 bombers and 1,000,000 rifles.

SHOCK:
TREATMENT BY DIRECT ACTION ON VEGETATIVE NERVE CENTRES

ACADEMICIAN LINA S. STERN
DIRECTOR OF THE INSTITUTE OF PHYSIOLOGY, ACADEMY OF SCIENCES OF THE USSR, MOSCOW

THE concept of shock is still inadequately defined despite much writing and many observations on pathogenesis and treatment obtained in the laboratory, in the hospital and on the battlefield. The existing differences of opinion are in part explained by the fact that the definitions are based on observations made during different phases of shock. It is generally agreed that traumatic shock shows two main phases: (1) an initial reflex phase following quickly after the injury and irrespective of the amount of blood loss; and (2) secondary shock setting in a few hours after the injury, manifest in weakness, pallor, fall in blood-pressure and a consequent fall in temperature. This last phase is similar in many ways to collapse as seen, for example, in typhoid, pneumonia and diphtheria, and is characterised primarily by circulatory insufficiency. An important factor in this derangement of hæmodynamics is thought to be reduction of blood-volume due to: accumulation of blood in the so-called blood depots (liver, kidneys, spleen, and, as emphasised recently, skeletal musculature); plasmorrhœa, leading to reduction in volume of the plasma by leakage through the damaged capillary walls; and actual loss of blood. When the loss of blood does not exceed 25% of the total blood-volume, blood-pressure is maintained at a normal level by means of vessel constriction. This reduction in blood-volume is compensated by absorption of fluid from the tissue spaces. After a few hours hæmodilution is often observed. This compensatory process may however prove inadequate if dehydration is present. Continued decrease of the volume of circulating blood will finally bring about an abrupt fall in blood-pressure despite vessel constriction. The resultant reduction in blood-supply to the tissues, with impaired nutrition and oxygenation, will lead to damage and increased permeability of the capillaries. This in turn will permit leakage of plasma through the capillary walls and the development of œdema. The diminished plasma volume means an increase in viscosity, and circulation is impeded. At this late stage blood-transfusion is of little value since the plasma is not retained in the vessels. The diagnosis of shock, although difficult to make in the initial stages, later becomes an obvious one from the characteristic symptoms of circulatory insufficiency. At this stage the blood-pressure is maintained mainly by constriction of the vessels, and the slightest disturbance—for instance, anæsthesia or a further small loss of blood or plasma—is sufficient to cause a rapid fall in blood-pressure.

Experiments made with our colleagues, Rosin and Chvoles, have proved that sensitivity, especially to pain, plays an important part in the development of shock. This work showed that irritation of the skin by an induction current for 2–6 hours causes shock, whereas when the skin is previously anæsthetised with procaine much longer electrical stimulation produces no effect. Given the same conditions, shock is most easily produced by irritation of the skin on the inner surface of the thigh and of the peritoneum and periosteum, whereas irritation of the dura even for as long as 8–12 hours does not cause shock. The rhythm of irritation plays an important part, shock usually appearing much more quickly when the rhythm is quicker. The criteria of shock in all these experiments were: (1) sudden and maintained fall of blood-pressure with a rapid and feeble pulse, (2) shallow breathing, (3) the absence of reaction to irritation, and (4) lowering of the temperature. All these point to a disturbance of the vegetative nervous system.

The important rôle played by preceding conditions in the development of clinical shock in man has been demonstrated by clincial observation. Excessive tiredness, prolonged insomnia, insufficient nourishment, fear, exposure, loss of blood, and, not least, painful irritation, lead after a transitory and relatively short phase of sympathetic over-stimulation to one of exhaustion and contribute in this way to the development of shock. The results of these experiments show that shock is caused, apart from loss of blood, by a whole complex of circumstances, each of which affects the condition of the nerve centres. Only when all these conditions are present does shock develop.

COMPOSITION OF THE CEREBROSPINAL FLUID

In studying the clinical picture of shock attention has been focused mainly on the functional biochemical changes in the blood and cardiovascular systems. If the mechanism of shock and its rational treatment and prophylaxis are to be better understood attention must be turned to the functional condition of the nerve centres, to their metabolism, and to the nature of the cerebrospinal fluid surrounding these centres. The important rôle played by the CSF in the maintenance of the functional condition of the nerve centres has been established by many years' clinical and laboratory observations.[1] Not only the penetration of abnormal substances from the blood into the CSF through the blood-brain barrier, but even an altered equilibrium of electrolytes in the CSF may be enough to induce severe changes in the nerve centres, sometimes fatal. In some cases we have observed that changes in the potassium and calcium ion concentration were related to the development of a shock-like state (Voskressensky, Nodia). The injection of small doses of calcium salts directly into the cerebral ventricles induces a condition of great depression under experimental conditions, while a minimal dose of potassium salts will produce excitation, sometimes leading to the animal's death by exhaustion. Moreover, the changes in the vegetative nervous system induced by strong peripheral stimulation are closely related to the pre-existing chemical composition of the CSF, and in particular to the concentration of potassium and calcium in it.

Attempts to combat shock must be primarily directed towards restoration of the circulation. In many instances however these efforts to combat shock by direct action on the cardiovascular system may fail because, in the presence of an intact blood-brain barrier, they do not affect the condition of the central nervous system. Many drugs are without action on the central nervous system when injected peripherally, whereas when directly injected into the CSF they give a maximal and powerful effect. Moreover, their action when introduced directly into the CSF may be exactly opposite to that obtained when they are injected peripherally. When injected into the subdural or subarachnoid spaces, many drugs are less effective than they are when introduced directly into the lateral cerebral ventricles. The most important agents in this respect are potassium and calcium.

EFFECT OF INJECTING POTASSIUM

Laboratory experiments by G. J. Chvoles at this institute have shown that the direct introduction of potassium ions into the lateral ventricle or cisterna magna gives rise to strong excitation of the sympathetic nervous system in cases of experimental traumatic, anaphylactic peptone and histamine shock. Phosphate ions, by reducing the concentration of free calcium ions, lead to a substantial decrease in the tonus of the parasympathetic centres. Seemingly as a result there is an increase in the quantity of circulating fluid due to mobilisation of blood from the blood depots and fluid from the tissue spaces. Chvoles's animals were in a state of shock as a result of serious wounds, with or without hæmorrhage; prostration was extreme, reactions to painful stimuli feeble or absent, blood-pressures were half normal or less, respiration scarcely perceptible. In all his experiments, injection of a small quantity of potassium phosphate (equivalent to 3–4 mg. of potassium) caused the pathological manifestations of shock to disappear completely; blood-pressure rose to normal within 30 sec., and respiratory rhythm and normal reactivity and excitability of the animal were restored. Introduction of the drug into the subarachnoid space by lumbar or thoracic puncture was without effect however. In some experiments where the blood-volume had been reduced to half normal by bleeding, introduction of potassium phosphate into the ventricles was sufficient to bring the animal out of the state of shock without the necessity of compensating for the blood loss. In control cases the

1. Stern, L. S. *Acta med. USSR*, 1939, **2**, 384.

introduction of physiological salt solutions or blood was ineffective. This action of potassium phosphate is seen only in the absence of anatomical injury of the vegetative nerve centre cells and while they still have capacity to react. When they are exhausted the drug has not this effect. This procedure is therefore indicated in all cases of shock where there are signs of the weakening of sympathetic tonus. The best results are obtained when the injection is not too long delayed, since after a time the nervous centres become exhausted and cease to react.

CONFIRMATION IN MAN

These laboratory results were fully confirmed clinically and on the battlefield. The technique in man is to inject a one-sixth molar solution (isotonic) of potassium phosphate (a mixture of potassium hydrogen phosphate and potassium dihydrogen phosphate giving a pH of 7·6) in a quantity of 1–2 c.cm. directly into the cerebral ventricles or cisterna magna.

The patient must be in a horizontal position (preferably on his left side) with the head lower than the body and bent on the chest; the lower limbs must be flexed. The external occipital protuberance and the first cervical spinous process are identified and the skin between them shaved and disinfected. A graduated cisternal needle or an ordinary lumbar-puncture needle is inserted exactly in the midline pointing towards the external auditory meatus and slid along the occipital bone until the atlantoid membrane is perforated (with a crackling sound). This occurs at a depth of 4–5 cm.; translucent cerebrospinal fluid will escape from the needle after removal of the stylet. Since in shocked patients the intracisternal pressure may often be low the cerebrospinal fluid often does not flow spontaneously and has to be drawn out with a syringe. After 1–2 c.cm. of the cerebrospinal fluid has been withdrawn, 1 c.cm. of the solution of potassium phosphate, which has been warmed to body temperature, is injected with a syringe under such a pressure that it penetrates into the ventricles. This method of treatment is simple and can be easily applied at the front. The preparation of the potassium phosphate solution is not complicated, but must be done carefully: the glass of the ampoules must be neutral; the mixture of the monometallic and bimetallic potassium phosphate (concentration one-sixth molar) can be prepared either from these salts (K_2HPO_4 and KH_2PO_4) or by adding the ortho-phosphoric acid to a solution of potassium hydroxide up to pH 7·6.

As a rule the effects of this injection are noticed in 1–2 minutes or even sooner: the blood-pressure rises and the respiration becomes deeper. The absence of these effects within a few minutes is generally due to the fact that the fluid has not reached the ventricles as a result of the incorrect direction of the needle or an insufficient pressure. In those cases one must repeat the operation.

Other measures of proven worth in the treatment of shock must also of course be employed: blood-transfusion where this is necessary, adequate fluids and nutriment by mouth, alleviation of pain, and removal of severely injured tissues which may be a source of substances harmful to the body, and a possible nidus for infection, besides in many cases causing direct leakage of plasma locally and resultant shock.

SUMMARY

The main feature of the final stage of traumatic shock is a considerable reduction in tonus of the sympathetic nervous system and a partial increase in that of the parasympathetic nervous system.

The most effective means of combating shock in this final stage is the raising of the tonus of sympathetic nerve centres by the direct action on those centres of potassium ions.

If potassium phosphate be introduced directly into the lateral ventricles or cisterna magna, the potassium ions will stimulate sympathetic nerve centres and the phosphate (reducing the concentration of ionised calcium) will cause a depression of parasympathetic centre tone.

This measure is indicated in traumatic shock in the phase of decreased sympathetic tonus, that is at a comparatively late stage. In no circumstances should it be employed when there is evidence of sympathetic excitation, as sometimes happens in the first phase of shock.

It is effective in man, as well as in experimentally produced shock in animals. In human cases, it must be introduced into the lateral ventricle or cisterna magna to be effective; 1–2 c.cm. of a one-sixth molar solution of a mixture of potassium hydrogen phosphate and potassium dihydrogen phosphate, pH 7·6, is injected with the patient lying horizontally on the left side with the head at a lower level than the body.

Other measures of combating shock, such as transfusion and alleviation of pain, should not be neglected.

TREATMENT OF PULMONARY TUBERCULOSIS BY LUNG PUNCTURE

CARLOS ROBERTSON LAVALLE
PROFESSOR OF SURGICAL PATHOLOGY IN THE NATIONAL UNIVERSITY OF BUENOS AIRES

IN an article [1] five years ago I described my technique for the treatment of bone and lung tuberculosis by puncture of what I termed the nucleus of post-allergic focal infection, and I attempted to explain the satisfactory results obtained by suggesting that puncture liberated into the circulation antibodies which had hitherto been confined in the nucleus. I was then able to report a favourable reaction to this treatment in 76–80% of about 450 bone cases and in a similar percentage of 200 lung cases. I have since extended my series of cases to over a thousand.

The nucleus in the lung has been carefully studied by stereoscopic X rays, and has been found to be generally

Fig. 1—Radiogram showing nucleus (arrow) in second right intercostal space.

similar to the lesion in bone which I described [2] in 1931. It is sometimes star-shaped and sometimes like a wheel of which the spokes are made up of small lines or dots and the rim is a more or less continuous line or a ring of round dots each about the size of a pin's head. The nucleus can often be seen in the ordinary X-ray film, but a series of stereoscopic films may have to be taken before it is identified. The shadows, particularly the star-shaped ones, are apt to be blurred because of the relatively long exposure used in chest radiography. We are aiming at exposures of 1/100 sec. in order to eliminate the effects of movement of the lung tissue. In the chest radiogram the nucleus appears as a circle about 1 cm. in diameter (figs. 1 and 2), but it is probably actually a good deal larger. The exudative components of the tuberculous process give it a blurred outline, and it is only when definite fibrous tissue has been formed that a clear impression of lines or spots is obtained.

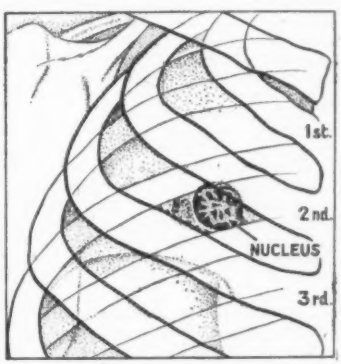


Fig. 2—Sketch of radiogram of upper part of right lung to show position and appearance (exaggerated) of nucleus.

1. *Lancet*, 1937, ii, 1299. 2. *Sem. méd. B. Aires*, 1931, i, 1743.

The nucleus always lies close to the visceral pleura, and in a constant position in the right lung. Its site in the adult male is 6 cm. from the midline in the 2nd right intercostal space; in women it lies at 5·5 cm. and in children at 4·5 cm. from the midline in the same intercostal space. The regularity of the site is remarkable, and it permits accurate puncture even when radiological localisation is unsuccessful.

TECHNIQUE

The patient is given calcium for three days before operation, and receives a hypodermic injection of morphia shortly before the actual puncture. The site of the lesion is checked from the X-ray films or is marked out from the measurements given above. After careful preparation of the skin a needle 5–6 cm. long and 1–2 mm. in diameter is inserted perpendicularly to the surface to a depth where it just traverses the pleura and enters lung. To those experienced in artificial pneumothorax work there is no difficulty in recognising the entry of the needle into the pulmonary tissue.

Calcium should also be given in the postoperative period.

RESULTS

The operation is not dangerous and is usually well tolerated. Patients do however complain, within a few hours, of slight shortness of breath, shivering and pain radiating through the chest from the point of puncture. Sometimes the temperature is slightly raised for a day or so and there may be slight staining of the sputum. In only 2 patients was a pneumothorax noted and in both the symptoms disappeared with the withdrawal of air next day. Provided the patient is not in an advanced stage of the disease the effects of the puncture are surprising: appetite and weight both improve, while temperature, sweating and sputum all tend to decrease. The changes are most notable in the milder types of phthisis. Exudative lesions tend to resolve and there seems to be no risk of dissemination of the disease. In the absence of an obvious ulcero-cavernous focus healing is rapid in 60–70% of the cases treated, judged by disappearance of tubercle bacilli from the sputum. Changes in the sedimentation-rate and in the hæmogram appear quickly and run parallel with the detoxication and general improvement in the patient's condition.

In the grosser forms of cavitated disease beneficial changes are not so apparent, though there is some resolution in the affected areas and cavities seem to clear up over a period of months. Even in this type of case I think the healing trend is quicker than with other methods of treatment, and 40–50% successful results may be claimed. Hæmoptysis occurs in a good many cases and is regarded as marking the onset of fibrosis before it reaches the cicatricial stage. Cavities up to 3–4 cm. in diameter diminish appreciably in size and may even close, though a second or even a third puncture may be used with advantage if improvement does not seem to be being maintained. The interval between punctures should be well over a month. In oldstanding sclerotic cavities I use cavernoscopy in order to cauterise the draining bronchus, about 4–5 months after the nucleus puncture (Lavalle 1941). Large apical cavities with adherent pleural layers do not often alter greatly in size and require thoracoplasty for their closure.

The improvement in tuberculous lesions in other parts of the body after puncture is comparable to that seen in the lung. Larynx, bowel, glands and joints benefit to about the same extent as the actual pulmonary lesions. In combined lung and bone-joint forms of tuberculosis I find that only 20% of cases treated by lung puncture improve; but if in addition the nucleus in the diseased bone is locally treated along similar lines the successful cases reach 75%. The more severe forms of joint disease, particularly tumor albus of the knee, only respond to the local bone puncture which I have described elsewhere.[3]

I should like to emphasise that puncture of the lung is relatively easy to perform, and is harmless to the patient. If the beneficial effects of the original puncture are not maintained the procedure can be repeated and in any case it should be done after any attack of intercurrent infection, such as influenza. One puncture is sufficient, however, in most cases.

3. *Surg. Gynec. Obstet.* 1941, **73**, 108.

SUMMARY

Puncture of the "nucleus of post-allergic infection" has proved beneficial in 60–70% of cases of pulmonary tuberculosis without cavitation and in 40–50% of cases with cavities.

The nucleus occupies a constant position in the second right intercostal space. It can sometimes be identified radiographically, but is often blurred by movement of the lung tissue.

Puncture is harmless and is easy to perform. It has now been used in over a thousand cases.

ABSORPTION AND EXCRETION OF OXALATE

J. F. BARRETT, B SC LOND

(*Courtauld Institute of Biochemistry, the Middlesex Hospital*)

CLINICAL interest in the metabolism of oxalic acid and oxalates is focused on the presence of calcium oxalate in stones and on the occurrence of crystals of calcium oxalate in the urine. Such crystals are often viewed with suspicion, since it is possible that they may lead to the development of calculi containing calcium oxalate. Commonly but not invariably crystals of calcium oxalate are found in the urine after eating foodstuffs rich in oxalate, notably rhubarb and spinach. Rhubarb, especially, is occupying a more prominent position in the diet of the nation under present conditions, and during the spring and summer is extensively used as a substitute for fruit. It therefore seemed to be of interest to investigate the factors influencing the absorption and excretion of oxalate.

In spite of many investigations carried out in the past on this subject, no clear picture has been presented, owing to the difficulties of accurately determining oxalate in urine. Thus as late as 1931 Cerecedo, having obtained a fivefold increase in the urinary oxalate in one experiment, stated that owing to the inaccuracies of the methods in use at that time the inclusion of this result was not justified. In the next year, Dodds and Gallimore (1932) introduced a method for the determination of oxalate which though laborious yielded accurate and reproducible results. This method in a slightly modified form has been used in the determinations which follow. The more recent procedure of Herkel and Koch (1935) embodies the routine addition of extra oxalate to the urine in order to obtain a suitable precipitate of calcium oxalate. The dubious nature of this operation is reflected in the considerable fluctuation in the daily output of oxalate in their subjects. The conclusions reached require confirmation under strictly normal conditions and with a more reliable method.

INVESTIGATION

Normal output.—The normal daily output of oxalic acid in the urine is usually given in textbooks as 15–20 mg., although some determinations by Widmark (1937) gave the normal range as 14–56 mg. in the case of medical students. The results obtained with 14 normal people of various ages and of both sexes are given in table I. A range of 20–47·5 mg. per day was obtained with an average excretion of 33·6 mg. This investigation was conducted during the winter and spring of 1941 and the diet of the subjects was unrestricted. The effect of diet was shown in subject 5, whose output rose to 67 mg. per day when a meal containing rhubarb and spinach was eaten. Subject 6 ate spinach regularly when obtainable. It is evident that the normal output of oxalate is higher than is generally supposed.

TABLE I—DAILY OUTPUT OF OXALIC ACID IN NORMAL SUBJECTS

Subject	Age and sex	Weight	Ox. ac. per day	Subject	Age and sex	Weight	Ox. ac. per day
		st. lb.	(mg.)			st. lb.	(mg.)
1.	30 M	12 4	36·8	8	60 F	10 10	20·0
2	25 F	8 8	26·5	9	62 M	9 10	28·1
3	38 M	10 6	40·3	10	33 M	13 7	32·6
4	19 M	9 8	36·9	11	29 F	8 12	27·5
5	19 M	10 6	38·2	12	29 M	10 9	38·8
6	52 M	9 4	47·5	13	27 M	10 9	41·7
7	26 M	10 7	29·5	14	44 F	8 10	26·1

Absorption.—It is of interest to compare the output of oxalate with the intake. According to Cook (1933) common foods such as potatoes and cabbage contain 20–40 mg. per 100 g., while rhubarb contains 240 mg. per 100 g. and spinach 320 mg. per 100 g. It is evident that very little of the dietary oxalate normally appears in the urine, as the persistence of oxalate in the urine on an oxalate-free diet or in starvation bears witness. It is generally thought that calcium oxalate is poorly absorbed and that its absorption is facilitated by the solvent action of the hydrochloric acid of the gastric juice; however, quantitative results on the absorption of oxalate under normal conditions appear to be lacking. As a preliminary, it was demonstrated in human subjects that the urinary excretion of oxalate is constant over a period of several days when diet is constant.

Thus subject 1 excreted 31·2, 31·4 and 30·1 mg. of oxalate on the third, fourth and fifth day of a five-day period on a standard diet. Similar figures for subject 5 were 31·8, 30·3 and 32·4 mg. In an experiment on subject 1, 90 mg. of oxalic acid in the form of sodium oxalate was taken daily for three days. The oxalate was ingested with the mixture of milk and water consumed at mealtime and is to be regarded as calcium oxalate. Of 270 mg. of oxalic acid ingested during this period only 9·2 mg. was excreted in the urine.

A similar experiment was conducted on a cat. During 2 three-day control periods the cat was fed on a diet of bread and milk flavoured with 'Marmite,' but received no oxalate; the amounts of oxalate excreted were 14 and 9·6 mg. During the next three days the cat was fed as before and also given a total of 108 mg. of oxalate (36 mg. of sodium oxalate in 20 c.cm of milk daily by stomach-tube); 11 mg. of oxalate was excreted. In the 4th three-day period the cat was starved and given 108 mg. of oxalate (36 mg. in 20 c.cm. of water daily) and excretion rose to 33·3 mg. In the final three-day period the cat was starved and given no oxalate; excretion fell to 10·9 mg.

Experiments with rhubarb.—Further experiments were carried out on human subjects 1 and 2 to investigate the absorption of oxalate when a meal containing rhubarb was consumed. Changes were made only in the main meal of the day, the remainder of the diet being constant and low in oxalate. With subject 1 the daily output of oxalate rose from 32·7 to 59·3 mg. when rhubarb but no milk was taken with a meal consisting of potatoes, meat and sprouts (table II). When a similar meal containing rhubarb was accompanied by ½ pint of milk, reconstituted from milk powder, the oxalate excretion remained within normal limits. In a similar experiment with subject 2 the meal consisted of meat, potatoes and carrots. When rhubarb was taken with this meal a value of 67·9 mg. was obtained for the urinary oxalate compared with a value of 31·1 mg. when ½ pint of fresh milk accompanied a similar meal on a subsequent day. A further experiment was carried out on subject 2 in which 0·4 g. of calcium as calcium chloride was consumed with the rhubarb; again the oxalate excretion remained within normal limits. The rhubarb used in these experiments was of the "forced" or early type and was stewed with sugar in the usual way. The figures in table II refer to the weight of uncooked rhubarb.

TABLE II—EFFECT OF MILK AND CALCIUM ON EXCRETION OF OXALATE

Subject	Date	Main meal	Oxalate in 24 hr. spec. urine
	1942		(mg.)
1	April 6	Potatoes 9 oz.; sprouts 4 oz.; meat 2 oz.; rhubarb 6 oz.; reconstituted milk ½ pint	35·3
	,, 8	Potatoes 9 oz.; sprouts 4 oz.; meat 2 oz.; coffee; biscuits	32·7
	,, 9	Potatoes 9 oz.; sprouts 4 oz.; meat 2 oz.; rhubarb 6 oz.; water ½ pint	59·3
	,, 10	As on April 8	36·9
2	April 11	Potatoes 8 oz.; carrots 5 oz.; meat 2 oz.; rhubarb 7 oz.; water, ½ pint	67·9
	,, 13	Potatoes, 8 oz.; carrots, 5 oz.; meat, 2 oz.; coffee; biscuits	28·3
	,, 14	Potatoes, 8 oz.; carrots, 5 oz.; meat, 2 oz.; rhubarb, 7 oz.; milk, ½ pint.	31·1
3	April 17	Potatoes, 8 oz.; carrots, 5 oz.; meat, 2 oz.; rhubarb, 5 oz.; calcium, 0·4 g., in water	30·8
	,, 18	Potatoes, 8 oz.; carrots, 5 oz.; meat, 2 oz.; rhubarb, 5 oz.; water	49·1

DISCUSSION

It appears from these experiments that the absorption and excretion of oxalate is greatly diminished when milk or calcium is taken with rhubarb. Evidently, oxalate is only absorbed in significant quantity when it is present in the intestine in the soluble form. A foodstuff such as rhubarb which contains a large excess of soluble oxalate may evidently cause the onset of a temporary but heavy oxaluria unless sufficient calcium is present in the intestine to precipitate the oxalate as the almost insoluble calcium salt. Milk appears to be the ideal source of calcium for this purpose, since it is usual to take milk in various forms at mealtimes. In addition, the buffering power of the milk may be of some importance, since calcium oxalate is unlikely to be redissolved in the stomach unless the pH of the stomach contents is low. While one would expect the oxalate to be reprecipitated as the calcium salt in the intestine it is conceivable that when the acid chyme is neutralised some oxalate may not be immediately precipitated as calcium oxalate if substances capable of hindering this precipitation are present. It is evident that the absorption of oxalate is closely connected with the quantity of calcium in the intestine. It has already been demonstrated that the absorption of calcium is related to the oxalate content of food. Thus Fincke and Sherman (1935) attributed the poor absorption by rats of the calcium in spinach to the presence of oxalate. More recently Speirs (1939) showed that not only was the calcium of spinach poorly absorbed but that when it was taken with milk the availability of the calcium of the milk was diminished. The above results on the absorption of oxalate are in agreement with these findings. It is logical to suggest that a meal containing much soluble oxalate should be accompanied by milk in some form. In this way the absorption of oxalate would be cut to a minimum and the tendency to alimentary oxaluria avoided, while at the same time the intestine would be assured of an uninterrupted supply of available calcium.

SUMMARY

A group of 14 normal people (10 men, 4 women) living on an uncontrolled diet excreted 20–47 mg. of oxalate a day (average 33 mg.). On a constant diet the excretion of oxalate in 2 subjects was found to remain steady over several days.

Soluble oxalate given by mouth to a cat on a diet containing milk did not raise the output of oxalate; but the same dose given while the cat was starving raised it considerably.

In 2 human subjects a meal containing rhubarb raised the output of oxalate to double the normal figure, whereas if milk or calcium chloride was taken with the meal the output did not materially increase.

At least part of the oxalate absorbed from the intestine is excreted by the kidneys, and if present in large quantities may favour the formation of stones. Calcium precipitates oxalate in the intestine and thus prevents its absorption.

It is recommended that milk should be taken with rhubarb and spinach, which are rich in oxalates, in order to avoid excessive oxalate absorption.

I wish to thank Prof. E. C. Dodds for suggestions and criticism, Mr. P. C. Williams, BSc, for help with the animal experiments, and those members of the staff of the Courtauld Institute who acted as subjects in the experiments.

REFERENCES

Cerecedo, L. R. (1931) *J. biol. Chem.* **93**, 269.
Cook, E. N. (1933) *Proc. Mayo Clinic*, **8**, 222.
Dodds, E. C. and Gallimore, E. J. (1932) *Biochem. J.* **26**, 1242.
Fincke, M. L. and Sherman, H. C. (1935) *J. biol. Chem.* **110**, 421.
Herkel, W. and Koch, K. *Dtsch. Arch. klin. Med.* 1936, **178**, 511.
Speirs, M. (1939) *J. Nutrit.* **17**, 557.
Widmark, E. M. P. (1937) *Act. Med. scand.* Suppl. 26, p. 340.

LEASE-LEND.—The following pharmaceutical products have been imported from the United States under the Lease-Lend arrangement and will shortly be available for distribution: amidopyrine, barbitone, benzocaine, pancreatin USP, peptone USP IX, phenazone, phenobarbitone, phenobarbitone soluble, pot. guaiacol sulphonate, theophylline, urethane carbromal, pepsin 1/10,000.

Reviews of Books

Epilepsy and Cerebral Localisation

A Study of the Mechanism, Treatment, and Prevention of Epileptic Seizures. WILDER PENFIELD, MD Johns Hopkins, DSc Oxfd, professor of neurology and neurosurgery, McGill University, director of the Montreal Neurological Institute; THEODORE C. ERICKSON, MD Minnesota, associate professor of surgery, University of Wisconsin. London: Baillière, Tindall and Cox. Pp. 623. 44*s*.

Dr. Penfield and his colleagues begin this important book by saying that originally it was their firm intention to deal with focal epilepsy and to elaborate those aspects of it which interested them "with no thought of encyclopedic treatment." Unable to resist the encyclopædic urge, however, they have satisfied it by inadequate reference to the rest of the huge subject with results which are ill-balanced and almost dangerous. The book is packed with original material derived from scrupulous observation and faultless technique; but the preoccupation of the authors with experimental surgery leads them to present epilepsy as a disease resulting from hosts of discrete lesions of varied pathology. As far as they are concerned the local lesion is the thing: epilepsy depending somehow on a biophysical or biochemical disorder and often inherited has an insignificant place in the book. It would have been better to omit the major subject of essential epilepsy altogether and to have presented a treatise on focal epilepsy. None the less, a long chapter by Dr. Jasper on electro-encephalography is one of the best reviews of the subject so far published; and a study of the psychology of epileptic patients by Dr. Hanover-Erickson is informative and balanced. As a survey of the anatomy and surgery of convulsive disorders the book is unequalled.

Surgery of Modern Warfare

(2nd ed.) Editor: HAMILTON BAILEY, FRCS. Edinburgh: E. and S. Livingstone. Vol. II. Pp. 1000. 40*s*.

THE second volume completes the new edition of this comprehensive book on war surgery. The articles on burns and on chemotherapy deserve special praise; the work on which they are based has been done in this war rather than the last, and they stand out by reason of their compactness and their satisfactory answers to many obvious questions. Some of the advice given on anæsthesia is disappointing. Surely the advantages of gas-oxygen and the disadvantages of ether in badly wounded patients need not be learned all over again after the work of Marshall and his colleagues in the last war. And why should it be suggested that the anæsthetist in the battle zone must carry on without gas and oxygen cylinders? It is discouraging, too, to see Mr. Jenner Verrall defending the guillotine amputation in a book intended as a guide to all the many who will have to do surgery under war conditions. Where continuous after-care is assured no doubt it has advantages, but in the last war its use caused needless suffering when the care was broken by long-distance transport. Illustrations are good and ample, and the companion volumes will be welcomed by war surgeons.

A Descriptive Atlas of Radiographs

(5th ed.) A. P. BERTWISTLE, MB Leeds, FRCSE. London: Henry Kimpton. Pp. 584. 42*s*.

A RADIOGRAPHIC atlas is a useful book for students and practitioners but to be effective it should contain first-class reproductions of common diseases and the diagnosis in every case should be fully established. Some of Mr. Bertwistle's radiograms are good, some are bad and many are indifferent. There are cases in which the diagnosis is doubtful and some in which the diagnosis is wrong. Thus a typical Charcot arthropathy of the lumbar spine is diagnosed as osteoarthritis (fig. 269). "A deformed gall-bladder" (fig. 553) is a common normal variation, and "an adhesion to the gall-bladder" (fig. 555) is a Phrygian cap deformity. Some pictures of gall-stones are printed wrong way round. Under the heading "normal chest" (fig. 695) the author makes the remarkable assertion that "the markings of the bronchial tree are beautifully seen, the older view that these markings are due to blood-vessels can be definitely discountenanced." Many of the reproductions in the gastro-intestinal section are poor, but the sections on normal bones, fractures and renal diseases are satisfactory. The first edition of this atlas appeared in 1926 and it is obvious that many of the radiograms antedate that year. Thus neither the technical nor the medical advances in radiology during the last 16 years are properly represented.

Edinburgh Post-Graduate Lectures in Medicine

Vol. II, 1940–41. By various authors. Edinburgh: Oliver and Boyd. Pp. 536. 12*s*. 6*d*.

MOST of these Honyman Gillespie lectures have already received notice in our columns. A reminder from F. E. Jardine of the value of clinical inspection is timely and salutary in these days of hasty recourse to special methods of investigation. D. M. Dunlop's lecture on medical dietetics abounds in shrewd sense, and GP's who see the end-results of both medical and surgical treatment will wholeheartedly endorse the opinion that peptic ulcer is best treated by bodily rest and mental peace. W. F. Harvey pleads for a simplification and a more extended use of blood-examinations and Charles Cameron discusses modern methods of treating pulmonary tuberculosis. In the surgical field, W. A. Cochrane surveys the present position of orthopædics, Sir James Fraser of wound infection and accidental wounds, and W. Mercer of fractures of the neck of the femur. In his interesting account of the treatment of war wounds in France during May and June, 1940, J. S. Jeffrey points out that local applications of sulphonamide produce a concentration 80 times greater than when the drug is given by the mouth. The diagnostic and therapeutic possibilities of tracheobronchoscopy and œsophagoscopy are considered by G. Ewart Martin, and of special interest to those concerned with the care of evacuees is G. H. Percival's lecture on war and skin disease. The volume ends with an informing and thoughtful lecture by R. J. S. McDowall on the physiological approach to medical problems.

Neuroanatomy

FRED A. METTLER, MD, professor of anatomy, University of Georgia school of medicine. London: Henry Kimpton. Pp. 476. 37*s*. 6*d*.

THIS book has been well planned to give the anatomical background needed in the study of clinical neurology. It is accurate, orderly and devoid of ambiguity; the style is crisp and the nomenclature logical and consistent. The 337 illustrations are all original and include reproductions of many novel dissections and unusual pictures of structures in the central nervous system. Line diagrams in colour are never used to simplify but always to elucidate, and have been introduced to good effect; those representing the meningeal structures of the base, and the relationship of nuclear masses in the brain stem, are specially helpful. The text is not interrupted by references but there is a full bibliography. The author has been imaginative in meeting the advanced student's needs.

Parents Revolt

RICHARD and KATHLEEN TITMUSS. London: Secker and Warburg. Pp. 128. 3*s*. 6*d*.

THIS book, which has a foreword by Mrs. Sidney Webb, is an examination with statistics of the causes leading to the limitation of families in England. The limitation is now so great, the authors find, that the one-child family has come to be the thing and families of four or five are looked on as unwieldy and eccentric. England as a power needs a large population, no doubt, but it is open at least to philosophic question whether England as a happy community needs more than the land can support; so that not everyone will immediately share the alarm and despondency of the writers of this book. They trace the cause of shrinking families to the individualist and acquisitive nature of our society; but acquisitiveness has presumably been rampant since man owned a wife and herds, and to denounce it will not put such a sense of community values into English- and American-speaking peoples as to restrain them from race suicide. Nevertheless, their indignation is stimulating, and their statistics, though they overload the book, provide starting-points for informed discussion of a topic which affects the whole race.

B.D.H.

SEX HORMONE PREPARATIONS

SEROGAN
serum gonadotropic hormone

In the female, Serogan stimulates the Graafian follicle of the ovary; thus it is used in delayed puberty, amenorrhœa and sterility due to non-ovulation. In the male, it stimulates the germinal epithelium of the testis, leading to active spermatogenesis; it is valuable, therefore, in impotence and sterility.

GONAN
chorionic gonadotropic hormone

In the female, Gonan stimulates the formation of the corpus luteum. It is used in menorrhagia and irregular uterine hæmorrhage. In the male, Gonan stimulates the interstitial tissue of the testis and secretion of the male hormone. It is indicated in eunuchoidism, Fröhlich's syndrome, also in cryptorchidism.

OESTROFORM
the natural œstrogenic hormone

Oestroform is used whenever there are manifestations of defective activity of the ovarian follicle. It is indicated in menopausal disturbances, both natural and artificial, in hypoplastic conditions of the female reproductive system and in associated conditions such as amenorrhœa, sterility or dysmenorrhœa, in disorders of the vulva and vagina — pruritus vulvæ and vaginitis—and in conditions associated with pregnancy — vomiting of pregnancy, missed abortion, induction of labour, uterine inertia and inhibition of lactation.

PROGESTIN B.D.H.
the hormone of the corpus luteum

Progestin B.D.H. is employed in the treatment of conditions resulting from defective activity of the corpus luteum — threatened and habitual abortion, menorrhagia and metrorrhagia.

Details of dosage and other relevant information will be gladly supplied on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Telephone: Clerkenwell 3000 Telegrams: Tetradome Telex London

SHor/E/104

More 'ADEXOLIN' capsules available

for expectant and nursing mothers

All planned schemes for the supplementation of the diets of expectant and nursing mothers nowadays include provision for vitamins A and D. It is therefore fortunate that more 'Adexolin' capsules have now been released to pharmacies for prophylactic and therapeutic uses.

Controlled observations have amply demonstrated the value of such extra-dietetic supplementation. A report* by the People's League of Health states that nearly half of about 5,000 expectant and nursing mothers tested were taking less vitamin A than they required. The toxaemia rate among pregnant women who received daily supplements, which included vitamins A and D, was significantly less than that of a control group.

After the birth, no less than before, the mother still needs vitamins A and D: first, to maintain her own stores; next, for her baby (if breast fed), to ensure the development of healthy epithelia as a safeguard against post-natal infection, and last, to prevent rickets.

Therefore, to safeguard both the health of the mother and the well-being of the child, the doctor is more than justified in providing 'Adexolin' capsules.

*Lancet, 1942, ii, 10.

GLAXO LABORATORIES LIMITED PRODUCTS OF THE GLAXO LABORATORIES GREENFORD, MIDDX. BYRon 3434

FOR RELIEVING PAIN

SECOND ONLY TO MORPHINE IN EFFICIENCY
BUT WITHOUT MORPHINE'S DISADVANTAGES

VERAMON is invaluable in the treatment of pain of all kinds, no matter what the cause. Within half an hour it produces analgesia lasting from 4-6 hours. VERAMON does not affect the heart, the respiratory, renal or alimentary systems; is free from hypnotic action and need not interfere with the normal occupation of the patient. It does not lead to habituation.

PACKINGS : *Tubes of 10 tablets of 6 grains. Bottles of 100, 250, and 500 tablets. Powder in bottles of 1 oz.*

VERAMON

'Veramon' is the registered name which distinguishes Barbitone-amidopyrine compound of British Schering manufacture

LITERATURE GLADLY SENT ON REQUEST

BRITISH SCHERING

BRITISH SCHERING LTD., 185-190, HIGH HOLBORN, LONDON, W.C.1

ASSOCIATED COMPANIES: *British Schering Research Laboratories Ltd., Alderley Edge, Cheshire*
British Schering Manufacturing Laboratories Ltd., Pendleton, Lancs.

THE LANCET

LONDON: SATURDAY, NOVEMBER 14, 1942

CONTROL OF VENEREAL DISEASE

THE chief medical officer to the Ministry of Health is to be congratulated on the tact and persistence he has shown in securing the withdrawal of the taboo on the mention of venereal disease on the radio and in the daily press. His opponents had a certain case, for few parents want to have their young children's curiosity aroused about this topic, and it is they and not the BBC lecturers or the newspaper editors who have to parry awkward questions. But the case for publicity is far stronger even from the point of view of the family group, which suffers more than anyone through ignorance of the dangers of infection. Sir WILSON JAMESON had to call attention to a rise in known civilian infections of syphilis from 5000 in 1939 to 5600 in 1940 and 7300 in 1941. If Service infections are added the rise is 70% and a parallel increase in gonorrhœa would probably be revealed if the figures could be ascertained. He estimated that there were nearly 70,000 new venereal infections last year; not a surprising figure for a nation of 45,000,000, subject to the disruptions and strains of war, but in a preventable group of grave diseases just 70,000 too many.

The first reaction of the press to its new-found freedom was a series of leaders full of valuable information for the public, but containing also some rather naïve assumptions. The writers seemed happily unaware that their papers had been the last stronghold of an obsolete tradition and that the real pioneers in breaking down the policy of secrecy are now dead of old age or on the verge of a dignified retirement. The National Council for Combating Venereal Diseases (now the British Social Hygiene Council) was formed in 1916 and from that date onwards thousands of lectures have been given to every variety of audience and masses of informative literature have been distributed. Even in 1919 the Church Congress at Leicester had a full and frank discussion on venereal disease and its moral and social implications, in which the then Archbishop of Canterbury took a leading part. The 200 free clinics to which the chief medical officer drew attention could not have flourished without strong local support. That the demand for enlightenment has already spread very far is shown by the results of a Gallup poll published in the *News Chronicle* of Sept. 16. The interviewers found that 83% of men and 76% of women were in favour of public bureaus for giving more information on venereal disease. What help is newspaper or BBC publicity likely to give towards solving the problem? It should certainly arouse flagging interest and bring infected persons more quickly to the clinics or to their own doctors. Indeed, one of the most useful ways in which the daily press could assist is by publishing particulars of local clinics in its advertisement columns, side by side with those of the Ministry of Labour or the Ministry of Food. In regard to prevention, however, it is not clear that publicity can do much more than has already been done, unless more emphasis is laid on the dangers of promiscuity and the need for securing a high standard of sex behaviour in the community. The chief medical officer pointed out quite rightly that he spoke only as a doctor and could only lay the medical facts before the public. But knowledge of medical facts is not the end but only the beginning of wisdom. There is no medical question in which the medical and moral aspects are more closely interlocked than in this one. The value of the whole campaign depends on the extent to which leaders of public opinion are ready to take up the challenge the doctors have thrown out. A further consequence of enhanced public interest has already emerged in a renewed demand for some form of compulsion. Notoriously the country is prepared to tolerate, as never before, invasions of personal freedom provided they are for the common good. The Gallup poll elicited the curious fact that, of the sample of the general public questioned, 64% were actually prepared to support a law requiring tests before marriage, though few of them could have thought about the question before it was put to them. The Ministry of Health is no doubt keeping its ear to the ground and will take advantage of any public demand for useful measures.

It is clear, however, that many technical complications unguessed by lay enthusiasts will have to be considered. Does the incidence of marital transmission of syphilis by spouses infectious at the time of marriage justify the vast trouble, expense and unpleasantness of mass blood tests for every prospective bride and bridegroom? Are experts agreed as to what they would do with the results of such tests when obtained? It is hard to see how compulsory treatment could be applied without notification, but is compulsory notification of gonorrhœa practicable in view of the difficulties of diagnosing the disease in women and of assessing cure? Moreover, with the quick results of modern drugs it is not going to be easy to persuade all doctors to notify the unwilling patient whose straightforward and early gonorrhœa can almost certainly be cleared up in a few days. Many cases of gonorrhœa, too, will not even consult a doctor now because they have no severe symptoms, and they would be much less likely to do so if the disease were notifiable; and it is the case of mild gleet that is particularly likely to spread infection. Probably the best immediate return will be got from the compulsory control of known contacts who have infected others, provided for under a new Defence Regulation (see p. 589). These people, whether male or female, will deserve little sympathy for any inconvenience they suffer, and the knowledge that such a measure exists will be a deterrent to the careless and selfish. Yet the opportunities of the present time may not recur, and we must not waste them on half-measures. If these diseases are to be overcome we must make the most of the cases which do seek treatment by examining every contact of every case. The Services use what is in effect notification and compulsion—if a serving woman is infected by a serving man and can identify him, then he is examined, and vice versa. It seems illogical under present conditions to apply this fundamental measure to one section of the population and not to all. Whole-hearted propaganda can convince the public that these are diseases which must be controlled, and controlled now; if the authorities agree that this can only be done through notification and compulsory treatment they will not find public opinion immovable, provided the preliminary bombardment is adequate.

LUNG PUNCTURE IN THERAPY

MUCH if not all of our treatment of pulmonary tuberculosis remains empirical, or is directed towards purely mechanical ends, and the essential problems underlying susceptibility and resistance remain unsolved. Progress in the last fifty years has been marked by such milestones as the introduction of sanatorium regime, artificial pneumothorax and the other ingenious and determined developments of collapse therapy, the rise and fall of gold therapy and more recently the introduction of cavity drainage. Each of these has enlarged the scope of available treatment, but the clinician, ably directed by the radiologist and abetted by the surgeon, has tended to focus much of his attention on the pulmonary lesion and to lean somewhat heavily on Providence in the matter of that humoral response which inevitably will determine the ultimate fate of his patient. In his paper on another page LAVALLE, of Buenos Aires, invites phthisiologists to adopt an ingenious operative procedure which, although directed to a focus in the lung, yet, he claims, exerts a beneficial influence on the whole defence mechanism both local and general. He holds that puncture of a certain area of lung with a needle is followed by a degree of improvement that is beyond all reasonable expectation in the exudative stages of the disease. His claims for improvement in ulcerative or cavernous forms are more reserved, but even then the healing tendency appears to run a more favourable course and assists any necessary surgical intervention.

HOUGHTON [1] has lately drawn attention to the improvement that sometimes follows trauma to the lung in the drainage of tuberculous cavities, even when actual drainage of the cavity is not established; the lung has simply been punctured by a fine trocar and cannula. But the basis of LAVALLE'S operation lies in the puncture of a definite area—the "nucleus of postallergic focal infection." This nucleus is said to lie with remarkable constancy just under the lung deep to the second right interspace in front, and its existence should readily be confirmed or disproved by pathologists. What happens when this nucleus is punctured is conjectural. LAVALLE suggests that there is a freeing of antigens or antibodies from the focus, and that this produces a rise in local and general resistance. Alternatively some of the effect may be brought about by an entirely non-specific action from local trauma of the tissues. Trauma elsewhere (in the skin, for example) is known to modify the reactivity to other stimuli, with the release of histamine-like bodies. What, for instance, underlay the remote effects of the seton which were so long unquestioned? There seems to be little difference in the local effect produced by trauma and by certain organic or inorganic substances. It will be recalled, moreover, that non-specific shock therapy has been advocated in the treatment of pulmonary tuberculosis and that a variety of antigens have been used. A well-known empirical effect of trauma is seen when tuberculous peritonitis is treated by laparotomy, often to the great benefit of the patient. Bone and joint tuberculosis has similarly been subjected to trauma by LAVALLE and others with advantage in a number of cases. Such explanations of the observed phenomena are, however, purely speculative.

1. Houghton, L. E. *Lancet*, 1942, ii, 199.

The simplicity of the puncture operation is at the same time an encouragement and a disadvantage. Uncontrolled enthusiasm before there has been confirmation of results may bring the procedure into disrepute before its value and place in treatment can be assessed. But its novel principle cannot be discarded without trial in view of the results claimed for it.

TOXÆMIA AND PLACENTAL ISCHÆMIA

IT is nearly thirty years since YOUNG first propounded his theory that placental ischæmia is the origin of the toxæmias of pregnancy. During this time the theory has received much lip service but has not been investigated at all thoroughly by other workers. It has achieved a place in the textbooks side by side with the dozen other theories, but, perhaps because of these evil associations, perhaps merely as a result of age, has lapsed gradually into partial oblivion. Now YOUNG [1] has jerked the theory back into the full glare of attention. Its basis remains the same, but it is supported by so many new facts that it must be given full consideration in any modern study of the toxæmias and will certainly stimulate research.

YOUNG'S primary thesis is that certain women have an "abortion taint" which is possibly endocrine in origin and reveals itself by interference with the maternal circulation to small or large areas of the placenta. In the early stages of pregnancy this causes abortion; in the later stages it causes placental necrosis or retroplacental hæmorrhage. This taint shows a strong tendency to recur in successive pregnancies, and in any pregnancy may result in any of these three manifestations. The more serious consequences arise when the maternal circulation to part of the placenta is disturbed in late pregnancy. This part undergoes necrobiotic changes which may not be recognisable in the first day or two, even histologically, but subsequently go through the various stages of infarction. Even in its early stages the necrosing tissue produces substances which cause albuminuric toxæmia; a large necrosis gives rise to pre-eclampsia or eclampsia. There is however one essential condition for this effect: the fœtal circulation must continue. Too large a placental lesion, such as one involving over half the organ, kills the fœtus and prevents the development of the toxæmia. Accidental hæmorrhage is the other serious manifestation of the abortion taint in late pregnancy. Hæmorrhage takes place behind a part of the placenta, which is thus cut off from the maternal circulation. If the blood can escape externally the placental damage is usually small and there is little resultant toxæmia. If the bleeding is concealed a greater amount of placenta is separated and toxæmia follows in two-thirds of cases. If the hæmorrhage is so severe that the fœtus is killed, toxæmia does not follow, though there may be a subsequent azotæmia similar in some ways to that seen in the crush syndrome. COLVIN, BARTHOLOMEW and GRIMES [2] agree that placental necrosis is responsible for the toxæmias of pregnancy, and that the severity of the toxæmia depends on the mass of the infarction. But they differ from YOUNG in maintaining that the infarction is caused by

1. Young, J. *J. Obstet. Gynæc.* 1942, **49**, 221.
2. Colvin, E. D., Bartholomew, R.A. and Grimes, W. H. *Amer. J. Obstet. Gynec.* 1942, **43**, 183.

obstruction of the fœtal vessels to the placenta. They do not accept that a patient has a true toxæmia unless they can demonstrate "toxic" infarcts or vascular diseases in the placenta. The predisposing factor to the obstruction of the placental vessels is a deposition of cholesterol under the endothelium. In an attempt to prevent this deposition, they administered thyroid in doses of gr. 1½–3 daily to women continuously from the third to the eighth month of pregnancy; the incidence of toxæmia in these women remained the same as in a series of controls. They then tried iodine in the form of 'Lipoiodine,' with a dose of gr. 1⅘ iodine daily, throughout the same period. This fairly definitely reduced the incidence of mild toxæmia, and possibly of the severer forms of toxæmia also though the figures are too small to substantiate this conclusion. How this effect was obtained is not clear, for the theoretical basis for the work would lead one to expect a similar effect from thyroid. Nevertheless the results are sufficiently hopeful to warrant investigation on an adequate scale.

These explanations of pregnancy toxæmia as a result of placental infarction are supported by a considerable weight of evidence and probably represent an advance towards the eventual solution. It is a stimulating mental exercise to try to account, on each theory in turn, for the different incidences of toxæmia in hydatid mole, erythroblastosis fœtalis, plural pregnancy, postmaturity, chorionepithelioma, partially separated placenta prævia, and retention of the placenta for several days after delivery.

DEFENSIVE SECRECY

THE Duke of WELLINGTON told Mrs. NORTON that, as Chancellor of Oxford University, he was "much exposed to authors." In their humbler sphere medical practitioners and hospitals are much exposed to lawyers. Whether as a counterblast to an unwelcome claim for professional fees or because facilities for treatment are too hopefully regarded as a guarantee of cure, disgruntled patients or their next of kin launch legal proceedings which are a notorious distraction of medical practice. Legal proceedings must be met with legal aid. "Say as little as possible," advise the defending lawyers; "admit nothing." The teaching is doubtless sage enough. Civil expressions of sympathy will be twisted into confessions of carelessness. A casual remark about a sheer accident will sound sinister when repeated forensically in the opening speech of plaintiff's counsel. On the other hand, if it be not too weak and too sententious to suggest it, are there no dangers in defensive secrecy? An overworked or under-experienced nurse uses the wrong bottle, or prepares the wrong solution of a dangerous drug; a difficult and perhaps necessarily hurried diagnosis is at fault, or some other regrettable contingency occurs. Loyalty among colleagues and hospital staffs rallies round. If the patient pulls through, neither he or she nor the next of kin need be any the wiser. Meanwhile a precautionary silence is maintained. But there is another side—the side from which the patients or their anxious relatives will be looking. When information withheld has at last been dragged out by the coroner, confidence in the medical profession and the hospital system will be jeopardised.

A simple instance may illustrate our point; let it be given as a hypothetical case. A patient aged 74 is taken by her daughter to hospital in a feeble condition. The plinth normally used in the receiving department happens to be occupied because a child, accompanied by her mother, is awaiting examination. The elderly patient is placed on an emergency table and her daughter is asked to withdraw. Two hours later, and with no word said about an accident, the daughter sees the mother again and is shocked to find her face cut and bruised; nobody will disclose what has happened. The daughter's husband calls at night in vain. Twelve hours after the patient's death, and a day and a half after the accident, the family is told for the first time of her having fallen from the table in the receiving ward. The details are elicited at the inquest. There should have been at least two nurses in the ward, but a temporary cause had reduced the staff there to one student nurse. The latter had done her best, standing between the two tables, to keep an eye both on the child and on the elderly patient; but, while the doctor was speaking to the child's mother, a bump was heard. The 74-year-old woman had rolled off the emergency table, which turns out to have been just an operating table, perhaps twenty inches wide. The medical evidence attributes death to hypostatic pneumonia (following immobilisation in bed), senility, myocarditis and arteriosclerosis. The coroner makes his comments. He knows that hospitals are short-handed; he knows that this particular hospital is in general admirably administered. There, however, are the ineluctable facts. The feelings of the relatives, baulked in their natural and proper desire for information, can be imagined. A verdict of "death by misadventure," to which the coroner adds an expression of sympathy with the relatives, exonerates all concerned from the immediate implications of legal liability. But there may well be an enlargement of the circle of folk outside who next time will wonder, almost suspiciously, what goes on behind those hospital doors, and why a patient's closest relations are denied their right to be told when something untoward has occurred.

PLATELETS AND THROMBOSIS

HAVING shown how to measure the stickiness of platelets,[1] Wright has now applied her technique to a study of the changes after normal labour and after surgical operations,[2] since these are times when venous thrombosis is particularly liable to occur. She found that parallel to the rise and fall of the platelet count there is a rise and fall in the stickiness of the platelets as measured by their disappearance from a heparinised sample of blood rotated in a glass bulb. The greatest stickiness and the highest counts are found about the tenth day, after which there is a slow return to normal, taking about another ten days. Simultaneous observations of the red-cell sedimentation-rate showed that the changes had a different periodicity—a maximum increase about the fourth day—and consequently Wright concludes that plasma factors were not responsible for the changing stickiness of the platelets. Her opinion is that large numbers of new platelets are released from the bone-marrow in response to the stimulus of trauma and loss of blood, and it is these young forms that cause the excess stickiness. All this goes to show that we must not concentrate too much on plasma factors in our efforts to avoid postoperative thrombosis, especially as the period of maximum platelet stickiness is also the period of greatest liability to thrombosis.

1. See *Lancet*, 1941, ii, 609.
2. Wright, H. P. *J. Path. Bact.* 1942, **54**, 461.

Annotations

PROF. LINA STERN

BESIDES conducting research the Institute of Physiology at the Second Moscow State Medical Institute trains teachers and research workers; many of those who studied there now hold chairs and lectureships in laboratories throughout the Soviet Union. Prof. Lina Stern, whose paper on shock appears on another page, is director of the institute. Her own interest in research dates from 1902 when she was a student at the University of Geneva; there, working in the laboratory of Prévost she began by studying internal secretions of the liver. Her MD thesis, written in 1903, was a physiological study of ureteric contraction, and was awarded a university prize. She became an assistant in Prévost's laboratory in 1904, and her work as a teacher and scientist was increasingly notable from that time onward. In 1906 she was accredited lecturer at Geneva, and in 1917 was appointed to the chair of physiological chemistry. In 1925, with a considerable European reputation, she left Geneva to share in social reconstruction in Soviet Russia. She founded her own school of physiologists, which has made a study of tissue barriers, particularly the blood-brain barrier, oxidation in animal tissues, the influence of metabolites on various physiological systems, the relations between central and peripheral sympathetic and parasympathetic centres, and the effect of high-voltage currents in animals. Since war broke out she has been engaged on physiological problems which have immediate application, among which is her method, now described, of directly influencing nerve centres in cases of shock. She has fought hard for the freedom of women, and many of her women students now hold important research posts. In 1939 she was elected the only woman member of the Academy of Sciences of the USSR.

RADIUM FOR UTERINE HÆMORRHAGE

SINCE the early work of the French gynæcologists in 1906–07 radium has been successfully used in various forms of uterine hæmorrhage. Although its hæmostatic action is not understood systematic work has put dosage on a proper basis. A survey of the Medical Research Council reports *Medical Uses of Radium* shows that for a time a wide difference of opinion existed as to the best dosage for a given set of clinical conditions, but since 1933 data from the Royal Free Hospital and the Marie Curie Hospital have confirmed the view that an exposure to 50 mg. of radium for 22–24 hours can be looked on as a maximum need for uterine hæmorrhage. Curiously enough while the interstitial radium treatment of cancer started with strong doses which gradually diminished as experience grew, the opposite tendency was taking place in the cases of uterine hæmorrhage, for much of the early work by Oudin, Verchere and Wickham was carried out with 50 or 100 mg. of radium, the exposures being for an hour or so repeated very cautiously at intervals. A further step was the recognition that the appropriate dose of radiation depends on the age of the patient, and in Elizabeth Hurdon's *Cancer of the Uterus* the fullest information on technique, dosage and results are given. In an analysis of 837 cases under observation for 1 to 10 years up to the end of 1935, 97% of the menopausal cases and 78·5% of the younger patients have remained well without further treatment. A recent unpublished report from the Marie Curie Hospital implies that radon has proved a complete substitute for radium in the treatment of uterine conditions. Here the exposures seldom exceed 24 hours, and there is little difficulty in adjusting quantities so that the same dose results. Russ and Scott [1] have shown that in the destructive action on the ovary of the rabbit radon can replace radium over quite a wide range in the quantities and times of exposure. Radon however is not a good substitute for radium when, as in breast cancer, exposure may continue for a week on end; the decay of radon cannot in such a case safely be made good by increasing the radon content of the needles, because the higher intensity is not easily tolerated by normal tissues.

1. Russ, S. and Scott, G. M. *Lancet*, 1940, i, 1048.

VIRUS INFECTIONS OF THE MAMMALIAN FŒTUS

WHEN Rous and Murphy[1] used the developing chick embryo for the cultivation of Rous sarcoma they could not have realised the potentialities of the field they had opened up. Hardly a week goes by but the embryo or its membranes are found to have new use in the study of the growth of viruses, bacteria, spirochætes, fungi and protozoa. Goodpasture was one of the first to seize on the possibilities of the method and has continued to adapt it to more and more problems. Viruses need actively growing cells in which to multiply and embryonic tissues seem to be the most suitable for this purpose. All viruses are not able to infect avian embryonic cells, but may grow in the embryonic tissue of other susceptible hosts, such as mouse embryo or guineapig embryo. Recently Sanders and Jungeblut [2] found that the murine strain of SK poliomyelitis virus grew best in tissue cultures of embryonic mouse brain, reaching a titre of 10^{-5} in the 6th culture generation, but also grew in cultures of embryonic guineapig brain, reaching a titre of 10^{-4}. Non-nervous mouse embryonic tissue was also found capable of maintaining a certain basic level of virus growth but was greatly inferior to the cultures of central nervous system tissues. The embryonic chick tissue was found quite unsuitable. The growth of these viruses in embryonic tissues has greatly facilitated the advance of knowledge of virus and rickettsial diseases. For their volume these tissues often yield many times the quantity of infective agent previously available from other sources for use as antigen for complement fixation and as vaccine for immunisation. The infective agents may remain highly virulent and have to be inactivated, as in rickettsiases, while in yellow fever and vaccinia the virus becomes attenuated during passage in these tissues. Though these chick tissues have been used for some years it was only recently that Berge and Hargett [3] pointed out that protein of 14-day chick embryos, in contrast to that of 10-day embryos, is highly anaphylactogenic for young guineapigs. This probably explains the severe reactions obtained with the equine encephalomyelitis vaccines made from the older embryos, in contrast to the slight or absent reactions from the yellow fever vaccine. Poleff [4] and Findlay and MacCallum [5] used minced human placental tissues in suspended cell cultures for the growth of vaccinia and yellow fever virus. Now Goodpasture [6] has advanced further by the ingenious method of grafting human fœtal membranes, chorion or amnion or both at once, on the chorioallantoic membranes of the developing chick embryo. The tissues were placed mesodermal surface uppermost and were apparently nourished by plasmatic circulation. Satisfactory infection was obtained by applying a paste of virus-containing tissue to the graft 24–48 hours after grafting. Using this technique grafts of human amnion were readily infected with the viruses of herpes simplex, variola, vaccinia and the virus of mare abortion; the last of these had not hitherto been propagated beyond doubt in the tissues of an alien species. Human chorion was very resistant to all the viruses used. This would explain the comparatively few cases of intra-uterine infection from infected mothers

1. Rous, P. and Murphy, J. B. *J. Amer. med. Ass.* 1911, **56**, 741.
2. Sanders, M. and Jungeblut, C. W. *J. exp. Med.* 1942, **75**, 631.
3. Berge, T. O. and Hargett, M. V. *Publ. Hlth Rep. Wash.* 1942, **57**, 652.
4. Poleff, L. *C.R. Soc. Biol.* 1939, **130**, 1083.
5. Findlay, G. M. and MacCallum, F. O. *Brit. J. exp. Path.* 1940, **21**, 173.
6. Goodpasture, E. W. *Science*, 1942, **95**, 391.

with such very contagious diseases as measles, mumps, chicken-pox and influenza, though a number of infections with small-pox have occurred. Wolf and others [7] have reported a case of prenatal inception of infantile toxoplasmosis; perhaps the chorion will be a good medium for growth of these organisms. The experiments of Anderson and Goodpasture have also thrown light on the mechanism of immunity in some virus diseases, for they found that skin from a chicken hyperimmune to fowl-pox was readily infected with the virus when grafted on the chorioallantoic membrane of the developing hen's egg but again became refractory when grafted on the immune fowl. A similar set of events occurred with skin from humans immune to cutaneous vaccinia, suggesting that in these diseases at least immunity depends on the antibody in the fluids bathing the tissues. For some unexplained reasons many animals which are susceptible in the embryo to various viruses are resistant during the first few weeks of life, and some which are susceptible in the first few weeks gradually become more resistant with age though active growth of tissue is occurring. The new technique of Goodpasture and his colleagues may make it possible to study specific resistance and susceptibility in a way that is impracticable in the intact host.

"THE DOCTORS MAYO"

IN a full scale biography of the Mayos, father and sons, and an authoritative history of the Mayo Clinic, Miss Helen Clapesattle has written an absorbing story.[8] She is of the University of Minnesota to which the Mayo Clinic is affiliated, and she is to be congratulated on the historical accuracy of her record and the way in which she has handled that part of the story which concerns clinic staff now living. Those who know the clinic intimately will find little fault with the results of her patient research, except that the wealth of the documentary evidence tends to slow up the swing of the story and make the book over long. William Worrall Mayo, born in Eccles, near Manchester, in 1819, migrated to the United States in 1845. He practised medicine as a pioneer physician in Minnesota against the primitive background of covered wagons, Indian insurrections, civil war and the rapid agricultural development of a frontier state. He died in 1911, but not before he had seen his two sons William and Charles rise to medical eminence and international fame in the very village in which the father practised. The main body of the book concerns the medical odyssey of these two remarkable men and the living memorial which they created. The Mayo Clinic has probably exerted a more profound influence on American medicine and perhaps on world medicine than any other single factor. How it was built and why it developed in a frontier village of Minnesota is told. At a time when group medicine is being actively discussed this book presents a statement of its ideals, underlying principles and end-results. Those who knew Dr. Will and Dr. Charlie personally will put the book down with admiration for its scholarship, but with the feeling that a shorter, more pungent biography is still possible, drawing a little more warmly two of the most remarkable characters, medical or otherwise, who have passed across the contemporary American scene.

OPHTHALMIC BOGIES

H. M. Traquair [9] has made a collection of popular misconceptions concerning the eyes, some of which many medical men share with their patients. Foremost of these is the question "Does over-use cause disease of the eye?" The answer is an emphatic No. The eye is a part of the body and subject to the same ills, and so one finds eye disease occurring chiefly as a result of such complaints as diabetes, nephritis, hypertension and toxæmia from whatever cause. Disease of the eye will no more result from over-use than disease of the brain from too much thinking, or disease of the ear from too much listening. At the same time, too much eye work will cause tired eyes, for which the cure is to rest them. The term "eyestrain" has come to stay, but we do not speak of brain strain or ear strain. No-one is surprised if their legs are tired at the end of the day, but all resent it if their eyes are weary. The question then arises, "How much will glasses relieve eyestrain?" If there is an appreciable error of refraction this should be corrected in office and precision workers. But even when this is done many will experience eye fatigue at the end of the day. It is usually found in these patients that it is not the effort of accommodation that causes fatigue but the effort of convergence, and relief will come to them when their muscles—including internal recti—have an increased tone, whether this be brought about by exercises, holiday or both. To supply these patients with convex magnifying glasses, unless they are presbyopic, is to worsen their lot, for the accommodation is thereby somewhat relieved, but the effort of convergence required is greater than before.

PHYSIOLOGY OF THE PREMATURE INFANT

CERTAIN physiological adjustments are usually successfully made by the newborn baby as he passes from a parasitic to an independent existence. The immaturity of the prematurely born infant, however, renders him less successful at such adjustments, and Levine and Gordon [1] of New York have discussed the physiological handicaps of the premature infant, leading logically to a consideration [2] of what can be done clinically to smooth the path. Premature infants show respiratory difficulties which predispose them to asphyxial attacks and aspiration pneumonia. Circulatory difficulties are indicated by cyanosis of the extremities and frequent œdema. Faulty control of body temperature facilitates their well-known tendency to alarming bouts of low and high temperature. A diminished tolerance of the alimentary tract predisposes to gastro-intestinal attacks. Other problems include the increased fragility of the capillaries, impairment of renal function, inadequate antenatal storage of minerals and vitamins, defective hæmopoiesis, immaturity of liver function and incomplete development of enzyme systems. This formidable list is analysed by Levine and Gordon in some detail. For example, the immaturity of the respiratory system can be shown to be related to at least five special problems. The respiratory centre in the premature has a high threshold for all stimuli, nervous and chemical; the centre is relatively poorly vascularised; a sparsity of elastic tissue in the lungs delays full pulmonary expansion; the muscular and skeletal structures are weak and soft so that intrathoracic negative pressure is poor; and finally there is the persistence of a fœtal type of hæmoglobin which may not take up oxygen so well in the lungs as the normal adult type. The erratic control of temperature in the premature infant is also shown to be due to various inter-related factors. First there is a low total heat production due to bodily inactivity and feeble muscular development. Next a surface area out of proportion to the body-weight and a paucity of insulating subcutaneous fat permit excessive loss of heat by radiation and convection. Finally Levine and Gordon show that the immaturity of the sweating mechanism leads to a breakdown of this means of compensating for exposure to heat. The renal function of the premature infant has recently been studied by Young, Hallum and McCance [3]; there is clear evidence of impaired urea clearance. Of immediate practical importance is the

7. Wolf, A., Cowen, D. and Paige, B. H. *Ibid*, 1941, **93**, 548.
8. London: Humphrey Milford, Oxford University Press. Pp. 822. 22*s*. 6*d*.
9. *Edinb. med. J.* 1942, **49**, 179.

1. Levine, S. Z. and Gordon, H. H. *Amer. J. Dis. Child.* 1942, **64**, 274.
2. *Ibid*, p. 297.
3. Young, W. F., Hallum, J. L. and McCance, R. A. *Arch. Dis. Childh.* 1941, **16**, 243.

physiological immaturity of the alimentary system. It is shown that there are heightened demands for relatively large quantities of food, and yet enzyme activity, swallowing and sucking reflexes, and a faulty absorption of fat all exist to add to the difficulties. Fat-splitting is essentially normal but absorption is defective. Further evidence of inefficient digestion is shown by studies on amino-acid metabolism. With a relatively high protein diet the premature infant tends to excrete certain intermediary metabolites of aromatic amino-acids. A striking discovery is that administration of vitamin C, in single or divided doses of 100–500 mg. of ascorbic acid leads to a prompt rectification of this metabolic aberration and the disappearance of the abnormal metabolites from the urine. This action of vitamin C is specific, and other substances chosen (vitamins A and D, riboflavin and others) were without effect. This consideration and many others arising from the review by Levine and Gordon lead to certain valuable practical measures. General aids for the handicapped premature start with an antepartum programme of diet, hygiene and general care. Specific measures include procedures which tend to minimise the severity of such potentially impending symptoms as asphyxia, hæmorrhages, anæmia, birth trauma, hypothermia and infections. The incidence of cyanotic attacks may be reduced by abstaining from the use of narcotics and analgesics shortly before and at delivery, by adequate resuscitative measures and the use of oxygen when indicated. Skilled medical and nursing supervision are essential and stress is laid on proper feeding. A low fat diet with relatively high carbohydrate and protein—digestion of the latter aided by vitamin C—is advocated together with relatively low fluid intakes. A daily intake of 120 calories per kg. is claimed to give optimal growth. Great care over the post-hospital regime of the premature baby is also important to complete the programme of his physiological adjustment.

RATCATCHERS' RIDDLE

SEAFARING rats go roving, whether the world is at peace or war; and dockside rats are hardy parents of big families. In the port of London an old feud between man and rodent has lately taken a new turn. For many years the dock authorities and their tenants the shipping companies have destroyed rats and mice, but unsystematically, without that nice attention to choice of bait and type of trap which raises ratcatching to the status of a science. Six-monthly inspection and fumigation of foreign going ships was established as an international practice in 1926 and the danger of spreading plague has thus been much reduced, but rats as carriers have a list of diseases to their discredit as long as their tails, and any live-and-let-live policy towards them would be fatal in the long run to the party which intended to do the living. There were fears, at the outbreak of war, that if bombing broke open warehouses, and ratcatchers went to other fronts rats might go from strength to strength; these have not been wholly fulfilled, for though the rodent population of ships has increased the land-rats do not seem to have made full use of the opportunities offered by bombing to rodents of resource and sagacity. The port health authority and the port of London authority have laid their heads together to make sure that things shall get better rather than worse. Dr. M. T. Morgan, port medical officer of health, and Mr. James Fisher and Mr. J. S. Watson, from the Bureau of Animal Population at Oxford, state[1] that the health authority has taken over all responsibility for rodent destruction while the port of London authority defrays the cost. The scheme covers all the premises belonging to the port and also the premises of tenants and the craft of shipowners who choose to share in it by paying a subscription. A staff of nine rodent officers carries out the work, and the Oxford bureau has collaborated and advised. The Seamen's Hospital has lent laboratory accommodation.

Some odd facts have been learned about rodents since the scheme has been running. Thus the old English black rat, who came over at the time of the Crusades, prefers to die for the sake of boiled shrimps, used as bait in a breakback trap; whereas mice fancy rolled oats. Brown rats can be put down conveniently by mass poisoning, a method to which the black rat fails to respond; and mice can rear naked families in a nest of frozen kidneys in a refrigerating chamber at 17° F. of frost. In the six months that the scheme has been running only 26% of premises have been visited by a single rat, and only 15% by a mouse or mice as judged on the evidence of droppings and the use of runs. These are good figures, but the area within the jurisdiction of the port authorities is only a small part of the frontage of wharves, docks, basins, embankment and river side; and from the river densely populated industrial areas spread inland. Thus the authorities are set about with good harbourage for rats, and even though they clear their own territory completely must be alert for fresh invasions. There is much to be done before docks, premises and craft are cleared; and meanwhile it remains for London planning authorities to make homes in the dock region more appropriate for men and less attractive to rats.

1. Preliminary report on Rodent Control in the area of the Port of London Health Authority, 5, Church Passage, London, E.C.2.

MINIMISING OXALURIA

IT has been known for very many years that the urine contains oxalates, and that, owing to the insoluble properties of their calcium salts, these are often in crystalline form and readily conglomerate into stones. The oxalates excreted by the kidney seem to be derived from two sources, the internal metabolism of the body and the food. We can do nothing at present to modify the former, but we know that certain foods, such as rhubarb, spinach and strawberries are very rich in soluble oxalates and that their ingestion often leads to a shower of oxalate crystals in the urine. Indeed, the limitation of their consumption by people with stones in their urinary tracts is an old medical custom. Most of us however like strawberries, and some of us are fond of rhubarb, and it is worrying to think that we may be ruining our urinary tracts by eating a little stewed rhubarb in the spring. As so often happens, the solution of this difficulty has been the work of many people, most of them not even interested in oxaluria. The studies of calcium absorption which have been made in the last fifteen years have clearly shown that anything which precipitates calcium tends to prevent its absorption if taken at the same time. Phosphates, phytates[1] and oxalates[2] have all been demonstrated to have this effect. Barrett, in the work reported on another page, has now established by experiment that the converse is also true. Milk or calcium salts, taken with soluble oxalates, prevent the absorption of the latter so that no increase in oxaluria ensues. This discovery rings true, for it is the local application of well-established principles. So children may have their strawberries, and we may all enjoy our poached eggs on spinach, and our rhubarb tart, without a twinge of foreboding—provided we take plenty of milk with them.

Sir NORMAN WALKER died on Saturday last, at Balerno, after a long illness. He succeeded Sir Donald MacAlister as president of the General Medical Council in 1931, and retired from the presidency in 1939, but retained till last year the seat which he had held as Scotland's direct representative since 1906. He was in his 81st year.

1. McCance, R. A. and Widdowson, E. W. *J. Physiol.* 1942, **101**, 44.
2. Kohman, E. F. *J. Nutrit.* 1939, **18**, 233.

Special Articles

A CONFERENCE ON INJURIES

AT the invitation of the Director-General of Medical Services of the Ministry of Pensions, a conference of surgeons was held at Queen Mary's Hospital, Roehampton, on Sept. 23 and 24, Mr. G. R. GIRDLESTONE presiding. Mr. T. P. KILNER demonstrated plastic and orthopædic cases. Arguing that the best dressing for a large open wound is skin, he suggested that all surgeons in charge of accident services should be given special equipment for cutting large Thiersch grafts of selected thickness. He demonstrated cases illustrating the use of thick Thiersch, tubular, and flap grafts. Mr. GEORGE PERKINS showed a patient with the moderate but disabling degree of equino-varus that is associated with the relative weakness of the external popliteal group of muscles after a partial sciatic recovery. These patients are much benefited by an inside iron, outside T-strap, and a toe-raising spring attached to the outer side of the sole opposite, but not distal to, the 5th metatarsal head. He then illustrated by a number of patients his ardent and infectious faith that it is the use, as natural as possible, of the muscles surrounding the fracture, which stimulates and accelerates union. He limits the extent of his plaster splints to the margin of safety. He dislikes the Böhler iron and the single stick, but likes a heel and toe movement with particular attention to the active use of the toes. He prefers crutches or two sticks with limited splinting to a long plaster which makes full weight-bearing safe, and even goes so far as to recommend that splints can be discarded, at least during the waking hours, on evidence provided by palpation and before there is radiographic evidence of union.

In the afternoon Prof. R. J. WILLAN discussed *failures after operation for derangement of the knee-joint*. He stressed the value of an exact history, and the far greater value of the evidence which could be elicited by X-ray examination as well as by clinical examination. Once again it was made clear that the diagnosis of an internal derangement, indicating the removal of a semilunar cartilage, requires great care and consideration. If this is true in civil life, decision to operate on a soldier or a pensioner requires even more deliberate judgment. The vital necessity for a thorough reconditioning was emphasised.

Mr. A. G. ORD spoke on the treatment of *minor fractures*, which he thinks are often kept in plaster too long. In his own clinic he finds periods of splintage safe which others might think dangerously short. The principle again emerged that it is the man and his team, rather than the method, which makes for success.

Prof. T. P. MCMURRAY discussed *non-union of fractures*, with special reference to the scaphoid of the wrist. In his opinion non-union of the scaphoid results from missing the diagnosis, or—though not so often—from a failure to reduce a displacement. It is wrong, he said, to suppose that the fractured scaphoid was almost always just a crack without displacement. Those in which there was displacement and which were not reduced would be less likely to unite, and more likely to give rise to a secondary arthritis. A practical test of deformity can be applied gently and slowly when the case was first seen after the accident; in the absence of post-traumatic swelling, if there was no deformity a full range of movement could be accomplished, whereas the presence of deformity would limit movement. He advocated carrying the plaster to the tip of the thumb; the position of the wrist should not be dorsiflexion, but neutral. Bone-grafting in his opinion should only be used in cases of delayed union in the presence of perfect reduction; it is a mistake, he thinks, to graft a scaphoid where there is malposition of the fragments, whether or not secondary osteoarthritis has already developed. In late ununited wrist fractures the bone may appear as if it were congenitally bipartite, but this condition will not, per se, be responsible for pain or for disability. The joint may possibly be a little more sensitive to a sprain, but after X ray has disclosed the old fracture the injury should be treated as a sprain and nothing more. On the other hand arthritis may have developed, and a sprain or continued occupational strain may aggravate and so call attention to the arthritis. In the presence, then, of arthritis with non-union, bone-grafting is absolutely contra-indicated. If the disability is sufficiently severe the scaphoid should, in his opinion, be removed. He admitted that reported results have not been good, but thought that this was possibly due to traumatic methods of scooping out the scaphoid. He preferred a gentle if tedious dissection with scalpel and forceps. He admitted that the power of the hand was afterwards less than normal, but the hand could be more freely used than in the presence of radioscaphoid arthritis. After this operation the joint should be kept at rest for 6 weeks, after which active movement should be gradually resumed.

In the discussion which followed some advocated arthrodesis for the secondary radioscaphoid osteoarthritis, as well as the excision of the proximal row of carpal bones.

Mr. C. GORDON IRWIN gave a cinematograph demonstration on *late surgery for disability of the hand* after gunshot wounds or septic infection. Where an old infection had flared up, he favoured delayed incision and active movements throughout. Provocative massage is advisable before doing a plastic operation, on account of the danger of flare-up. For Dupuytren's contracture, he thinks excision and grafting better than tenotomy. For stiff fingers, the position of the bones when fractured is immaterial, but the motor apparatus is important. He had never succeeded in restoring movement in stiff fingers by any form of surgery. Amputation of a finger is justified if it interferes with the patient's working capacity, but amputation of the hand is done too often, he considers, and the loss of a hand is a tragedy. He had performed several successful cineplastic amputations but the limb-fitters had never been able to fit a suitable prosthesis. Repair of extensor tendons is usually successful, repair of flexor tendons gives poor results. In amputation of the finger the head of the metacarpal should be left, since function is more important than a cosmetic result. He had not seen painful stumps after finger amputation except when there was a question of compensation or pension. Excision of nerve bulbs is never successful in abolishing the tenderness, he finds, and correction of malunited phalanges by ostectomy gives bad results. Fingers should not be splinted for longer than 7–10 days, and the thumb should not be held in the plane of the hand, but abducted and splinted at right angles to the plane of the hand. He was not in favour of doing plastic reconstruction of fingers.—Mr. KILNER emphasised that for crippled hands prevention was better than cure. After seeing burns treated in many hospitals he was a strong supporter of the Bunyan method, and in particular he advocated the first-aid Bunyan bag, filled with sulphonamide. The important things in the treatment of burns were the early control of infection and the early removal of necrotic tissue, so that the raw area could be covered with a skin graft at the earliest possible moment. The best dressing for a raw surface area was transplanted skin. Early movement of the fingers is important—another argument in favour of the use of the Bunyan bag. The nursing difficulties are greatly lessened, he finds, when the Bunyan bag is used because the patient can be moved painlessly. In treating burnt hands, the forearm should be slung. Resting the hand on a pillow encourages deformity. In Dupuytren's contracture, and in burns, the important question is: has skin been lost? If so it should be replaced by a graft. He wondered whether any operation on fixed finger joints was worth while, and he thought that the value of cineplastic amputations should be reinvestigated.

Mr. G. H. STEVENSON thought shortage of material would prevent the wide application of the Bunyan bag treatment. A short arm bag would be economical, and electrolytic sodium hypochlorite could be manufactured in hospital. He was not satisfied that the ideal first-aid treatment for a burn had yet been found, but thought we might go back to an oily solution. He had had good results by grafting skin on the end of a denuded terminal phalanx, but not much success in repairing flexor tendons in the hand. He was strongly opposed to the treatment of hand and finger injuries in a septic casualty department. All patients with these injuries should be admitted, they ranked in urgency with fractured femurs. Surgeon Rear-Admiral G. GORDON-TAYLOR said many burns had been treated by tanning. It was not gener-

ally realised how many patients had at times to be given their first treatment by one doctor who, perforce, chose the quickest and simplest treatment. He deprecated the modern view that cut tendons should not be immediately sutured.—Mr. IRWIN in reply said he had himself had the two flexor tendons of the index finger sutured two weeks after they had been cut. The result was excellent. He always used to advocate immediate suture of cut tendons, but after reviewing his cases he decided to suture later; and his results since had greatly improved. He advocated the Bunyan bag as first-aid treatment. Lengthening fingers with bone grafts covered with grafted skin was rarely worth attempting because a finger was very little use unless it possessed delicate sensitivity. In repairing tendons he had successfully grafted extensor tendons, but had failed with flexor tendons.

MEDICINE AND THE LAW

Mistaken Diagnosis of Pregnancy

ENTERING judgment in Megarry *v.* Vernon on the basis of an agreed settlement, Mr. Justice Norman Birkett observed that, if he had any sympathy in the case, it was equally divided. Miss Megarry, aged 44, had offered her services to the WAAF and, during medical examination, had been told that she had a fibroid growth. She was advised that a good gynæcologist could remove it and that she could then offer her services again. She went into hospital, taking with her a note from her panel doctor and another from the WAAF doctors. The experienced surgeon who prepared to operate found, on opening the abdomen, what looked like a typical pregnant uterus. After consulting his colleagues, he closed the abdomen without completing the operation. It is by no means unknown to him (as to others) that women desirous of terminating an unwanted pregnancy sometimes exploit a surgeon by having an operation in such circumstances as these. He told the patient next day of his conclusion. She indignantly denied the allegation. Later there was an interview with the patient's brother, a medical practitioner, at which the surgeon repeated his view that the patient was 4½ months pregnant in spite of her denials. Further examination and a first and second Friedman test showed that the diagnosis was mistaken. The surgeon expressed his regrets to the patient for his error, but, not unnaturally, he failed to conciliate her. He had attacked her chastity, and she sued him for damages both for negligence in his diagnosis and for slander of a most serious kind. The defendant denied the negligence and the slander and, in respect of the latter, pleaded privilege.

At the trial Miss Megarry gave evidence bearing out her claim. She said she asked the surgeon to record his mistake in writing, but he refused. Expert evidence followed on her behalf. Next morning, after the defendant surgeon had been in the witness-box for an hour, and before his colleagues and his own medical experts had been heard, the plaintiff's advisers initiated a settlement which was obviously a proper ending to the case. The court was thus deprived of an interesting argument on the issue of privilege wherein it would seem that the defendant should have succeeded. On the issue of negligence in diagnosis plaintiff's counsel had insisted that it was perfectly easy, when the abdomen was opened, for a surgeon to detect whether he was dealing with a fibroid or a pregnancy. The defendant's case was that he made no examination *per vaginam* because this is not the common practice with an unmarried woman. He did not feel justified in taking the uterus out of the abdominal cavity for more detailed examination because this would have meant a larger incision and possible disturbance to the supposed pregnancy. He was evidently, until his mistake was established, convinced of the correctness of his diagnosis; this involved the assumption of wilful deceit and the danger of his being made a party to an illegal operation.

Diagnosis of pregnancy is not so absolutely certain a matter as patients may suppose. Both the Aschheim-Zondek test and the Friedman test have their margin of error, however small. Even with X-ray examination the radiogram may be misread or may not disclose the true condition. The uncertainty is all the more reason for not telling a patient definitely that she is pregnant unless she has admitted the fact; it is wiser to regard the case as one of mere suspicion. Doubtless the defendant in the recent unfortunate case would now be ready enough to acknowledge that he committed not only a mistake in his professional judgment but also an indiscretion in the firmness with which he maintained his mistaken view. His experience may be of value to others in a like position.

In England Now

A Running Commentary by Peripatetic Correspondents

I WELL remember my disappointment when Eddington first made his pronouncement that, for the one home of life in the Universe, Nature had scattered a million useless barren stars in space. I had always hoped that life might be more widely spread than that. The universe seemed hardly worth running if so little of it could house life; for human reason almost demands that life is the only thing for which it is worth while to run a universe at all. But the depression produced by reading Eddington was as nothing to the utter hopelessness engendered by Jeans; for Jeans has declared that the home of life in the universe is as "a millionth part of a grain of sand out of all the sea-sand in the world." Yet, in the end, it was Jeans who cured my depression; for his statement was so dramatic that it made me think. I began to recall the endless miles of sandy beaches on which I had roamed in various parts of the world, and I thought how wonderful it was that Jeans, who had never even seen all these and the thousand more besides, should have any definite idea how much sea-sand there was in the whole world. And on this a great assurance came to me, for I realised that, in truth, he had no idea at all. It is quite beyond the bounds of possibility that any human being, no matter how clever he may be, could give even the roughest approximation of an estimate of how much sea-sand there is in the world. I am quite sure Jeans could not even pretend to make a guess at it. The statement, I concluded, carries no more authority than would be implied in the dictum of the gardener's boy as to the number of blades of grass there were in the world. What then is the use of dragging in "a millionth part of a grain" as though the matter were being dealt with by methods of great mathematical precision? After considering these things I became as the savage who, having accepted the story of Jonah and the whale as a sacred verity when it was taught to him by the missionary, was subsequently instructed in the doctrine of the immaculate conception. This he was quite unable to believe, and, after thinking the matter over, said to the missionary: "If that woman had been my wife I would have killed her; I don't believe it; and, now I come to think of it, I don't believe the story of the big fish either." Frankly, the "millionth part of a grain of sand out of all the sea-sand in the world" story has made me bold to say that I don't believe it and that I don't believe the "one in a million" story either. To my great relief, it is now possible to fall back on the more recent dictum of the president of the British Astronomical Association that, by the law of probability, "amid the vastness of the universe life is widely diffused." This, in itself, is a welcome relief, but for my present line of thought there is more interest in the matter than that conveyed in these comfortable words. Dr. Davidson sees in Mars a place "where conditions prevail that will probably prevail in thousands of millions of years from now on our Earth, when most of the atmosphere will have disappeared and probably most of the animal life." Evidently Mars has been through its troubles, life is passing into a steady decline and the only possibility is that, though "there is no reason why vegetable life should not exist," animal life has passed. On Earth our troubles are with us: there is no need to remind anyone of that. But things are very different with Venus. "In hundreds of millions of years from now it is possible that Venus will be the abode of higher forms of life, though it is impossible to say whether their development will resemble that which took place on the Earth." Venus has all its troubles ahead and they lie well in the future. There have been many who have thought it would be a great achievement of science if we could one day communicate with Mars. I have no interest whatever in the possibility of com-

municating with Mars. Whatever form they may have taken, its troubles are all done with. But I certainly think that someone should try to communicate with Venus. Anyhow we *do* know what has happened to us on Earth. We can all realise the disaster that occurred when evolution took the foolish turning that ended in the emergence of man from a decent "lower mammal." Someone should warn Venus before it is too late. We do not want a beautiful planet like that to be ruined if we can avoid it. It is surely enough that we should ruin our own.

* * *

It has been my good fortune to sail in all sorts of craft, ranging in size from half deckers to large schooners. I have cruised, I have raced, but always there has been something missing. Something which, now that I have at last attained it, has made me realise that R. M. Ballantyne was not entirely in the realms of phantasy when writing of coral beaches fringed with palms and sapphire blue seas on which schooners made their way.

All this from having to visit British Honduras. This country lacks adequate communications, though active measures are now being taken to improve them, and of necessity much of the traffic is carried on the rivers or along the coastal waters sheltered by a fringe of islands called cays. These cays, which are typical tropical islands, range in area from a few acres to a square mile or so. One trip down the coast scheduled for me would normally be made in a motor boat, a hot and often smelly journey occupying a considerable part of a day, and the same on the return journey; but my host, whose kindness and originality I can never praise enough, arranged a passage for us in the handsome schooner of about twenty tons belonging to a well-known naturalist. Never has any excursion steamer left Tower Pier with a more light-hearted ship's company than did ours on the brilliant early morning we left Belize. The vessel had a crew of three Bay Islanders. Originally these islanders were British colonists along part of what is now the Honduras Republic. Now citizens of that country, they remain British in outlook and English is their language.

On a spinner over the counter we caught fish of a size that more than answered the fisherman's prayer. I can recommend for luncheon grilled kabala steaks, the colour reminiscent of salmon, and the flavour... well! Inhabitants of most British territories bordering the Caribbean have, tragically enough, to eat salt fish imported from the North American coast rather than the fresh food provided on the spot. Our work ashore completed left us with an hour or two of light to reach the cay where we planned to spend the night, and we lazed between the islands steering by the appearance of the white sea bottom, many feet below us, easily seen through the gin-clear water. Finally, we arrived at our anchorage and were all quickly over the ship's side to bathe in the Caribbean, which, if once sampled, spoils you completely for bathing anywhere else in the world. An idle evening was spent on deck under the bright tropical sky, our only regret being the deteriorating news of the Japanese advance towards Singapore. The wireless-set may or may not have been a boon that night, but it did at least tell us the worst. It was a crime to go to sleep, but the effects of a day such as had passed could not be delayed. We settled down to eight hours of the best.

With full daylight it was possible to take stock of our surroundings in greater detail than on the previous evening. The schooner lay in a bay about a quarter of a mile from the shore sheltered on the weather side by small cays. Ashore could be seen some of the few inhabitants moving around their lotus island, while we on board wished the clock would stand still so that we could relax and enjoy the golden hours. But there was more work to be done, so after another exotic bathe and breakfast it was up-anchor and away.

* * *

The ripening of the apples in my garden was the signal for a more than usually severe outbreak of petty larceny; for in addition to the usual small boy to whom stolen fruit tastes sweetest the more dangerous type of thief who steals to sell in the black market has invaded my privacy. The worst feature of the work of these scoundrels is that having dared their youthful acquaintances to accompany them into forbidden territory at the first alarm their cry is "Devil tak' the hindmost." The result is that the relatively innocent smaller boys are caught while the real criminals by virtue of their superior agility escape the retribution which should justly befall them. There have, however, been so many raids on my orchard of late that it has become necessary in the interests of my fruit trees, if for no other reason, to make an example of the first available scapegoats. Two wretches who invaded the sacred precincts last night were misguided enough to climb too high in the tree to make a timely retreat and instead attempted to hide in the upper branches. When spotted they apparently appreciated the hopelessness of their position and surrendered promptly. According to the best traditions of the Force I began my examination by asking for names and addresses. Without a moment's hesitation the younger of the two ragamuffins gave my own name and indicated an abode in a nefarious quarter of the town. I told him that he was little credit to a good name, but as I could not persuade him to alter it, had to pass over his offence for the time being. The other scamp found some difficulty in deciding whether he was called Robert or Bobby, but as it proved later that his real name was William he had cause enough for uncertainty. There had been a third rascal with them, so they said, whose name was extremely appropriate; he was called Robbing and like Judas of old had had the bag, which was half full of fruit when he absconded leaving them to face the music. From their willingness to give information about him I suspect that they knew that he had left them to their fate without doing much to help them. Some further inquiry revealed that one of our two captives was a hardened sinner. He admitted a previous conviction for "selling" wood as he called it, without thinking it necessary to tell me that theft of the wood was a necessary preliminary to its sale. When asked why he thought I had taken him into custody and why I would presently turn him over to the police he said that he had been "eating" apples. I suppose such an evasive turn of mind indicates that the child is psychologically abnormal but the theft of a few apples scarcely seem to justify his incarceration in Broadmoor as a criminal lunatic. In due course a sergeant and a constable arrived, a notebook was produced and in it were entered the particulars which I had elicited, together with my own name, address, occupation and to my annoyance, my age. I often used to wonder why every report of court proceedings ran on this wise, "John Smith (59) of 19 Apple Row, Orchardston, a seedmaker by occupation, was charged with stealing sugar." It is plain to me now. No policeman worth his salt regards the description of one of his fellows, be he witness, prisoner, or mere suspect, as complete without all those particulars. I, however, dislike publicity to be given to the fact that I am entitled to an old age pension and consider that as a gesture to public opinion the ages of all parties involved in prosecution might well be given. The press report already quoted would then read, "At Rhimie High Court today, before Sheriff Whalley (99) of 'The Weasles,' Stotley, John Smith (59) of 19 Apple Row, Orchardston, was charged with stealing sugar. Constable A. McNabbem (67½) of the local police force deponed that ..."

Our youthful criminals answered with creditable self possession the sergeant's questions, and mercifully neither burst into tears during the examination. By some mischance the booty which I had forced the scamps to disgorge was lying close by on a side table where it caught the eye of the youthful budding Sherlock Holmes who accompanied the sergeant and before I realised what was happening it had been impounded as evidence and, in addition, I had to give them my wife's last brown paper bag in which to remove it. It appears that these two miscreants will appear in court in about six weeks' time. As I have never known these apples to keep for more than a month after being pulled from the tree I tremble to think what horrid sticky mess will be produced from that paper bag on the dies iræ. It appears too that I may have to lose a morning's work to give the evidence which will secure the conviction of my two scapegoats. The price which I am being asked to pay for a little peace is heavy, and it would have been far less trouble to turn them over to their own parents for correction.

That article on lid-retraction in the *Lancet* of Oct. 3 intrigued me. What is this state of staring anxious surprise? Surely it is a defence mechanism. Not only is the visual field increased—at least mine is—and its periphery more illuminated, but it is also the most delicate method of detecting the direction of the wind. If you go out of doors, especially on a cold day, and stare violently the windward part of your recently uncovered conjunctiva smarts; when you face the wind for some reason it doesn't. If you watch a boy suddenly smelling wood smoke, his eyes slightly stare, the head rotates and goes backwards, the nostrils dilate and more conjunctiva is uncovered. It is the method of getting "centre" to the wind's bowling. Why is it important? Because if our noses were half as efficient as those of the fathers of our phylum or our fox-terrier's, of whose turbinates I am reminded every time I eat a cake of shredded wheat, we should know what was moving within a hundred yards of us upwind. What's more, binaural directional hearing cannot function properly unless the error of the wind is obviated by facing it. Anyone who has watched dogs hunting or deer feeding, to take examples from our brother mammals only, will realise the overriding importance of the wind to them. The nose is the enemy, food, water, path and mate detector, especially at night, and the uncovered conjunctiva is its invaluable assistant. I know a lot of people snort at this sort of thing. They remind me of a nouveau riche. O no, I was never a slightly unscrupulous manager. A scheming clerk? Don't be silly. A nasty little office-boy? Ridiculous! I was always as I am now, big, prosperous, pot-bellied, smelling of cigar smoke, gold chain, powerful, omniscient. Yes, staring is a defence mechanism developed probably not so much for individual protection as for tribal protection, for the punishment on the individual would not have been so constant and reforming.

And it is a nicely graduated mechanism. The wide-eyed children need it most and it is correlated in them with better directional hearing (who sees the aeroplane first?), keener smell (a lot of children know their masters and mistresses by smell) and acuter taste ("I can't tell the difference between sugar and saccharin *this* war"). The day-dreamer is another who needs some limited measure of its protection. Why in Graves's disease the autonomic interprets some internal poison as an external threat, an "alert," just as in asthma, she interprets it as a respiratory invasion, is fairly clear. For millions of years those were the common if not the only threats, and she is as much automatic as autonomic. ("She" because of her motherliness, contrariness, immunity to argument and sense of humour. How she would chuckle at a term like "conditioned reflex").

Modern medicine is so taken up with "how" that it often forgets to ask "why?" We've got to the small boy's pull-the-watch-to-pieces stage, or it's possibly a reaction from the false and facile assumptions in the post-Darwinian period, of which this little essay may not be entirely innocent.

FACIAL HEMIATROPHY

L. Zeno reports a case of facial hemiatrophy successfully treated by means of free fat-grafts (*Ann. Cir. Argentine*, 1942, **8**, 52). A boy of ten years had received a blow on the right side of the face when fighting another child two years before, and atrophy of that side followed. The atrophic changes affected chiefly the subcutaneous fatty tissue, but the skin was also involved, with diminished sense of pain and of secretion of sweat and sebum. The child's mental state had suffered from the effects of the deformity; he was timid and shrinking and ashamed to show his face to strangers. An incision was made in front of the ear, parallel to the posterior border of the ramus of the mandible, and with Mayo's scissors the subcutaneous tissue of the cheek was split so as to form a bed for the graft. A second incision in the nasolabial fold enabled a similar bed to be formed in the upper lip, which had to be freed from the underlying muscle in order to bring down the angle to the level of the opposite side. Through these two incisions free fat-grafts obtained from the gluteal region were insinuated with forceps. The skin wounds were closed and pressure was applied by a plaster cast fixed over the head with a bandage. Recovery was uneventful, the cosmetic result was excellent, and the boy's mental state was greatly improved.

Letters to the Editor

COMFREY, MAGGOTS AND UREA

SIR,—One of the nurses in a neighbouring village asked me, a fortnight ago, if I knew of anything that would help a poor old woman suffering from a chronic ulcer on her leg. I gave her some comfrey (powdered root) wherewith to make a dressing and a little bottle of allantoin wherewith to reinforce it. I had a message yesterday informing me that the ulcer is practically healed. I am disposed to think that it is best to use the comfrey preparation because, as in others of the simple remedies, the natural allantoin is dextro-rotatory whereas synthetic allantoin may become lævo-rotatory if the crystals are old and have been exposed to the air.

Cheltenham. CHARLES J. MACALISTER.

SIR,—Your annotation seems to imply that allantoin in general, and allantoin admixed with sulphanilamide in particular, is of no proven value. After an extended trial of the latter, I am opposed to this view. The results I have obtained in using it in conjunction with cotton suture and ligature material in nearly 1000 cases compel me not to allow this implication to go unchallenged.

Harley Street, W.1. HAMILTON BAILEY.

COMPLEMENT FIXATION IN TYPHUS FEVER GROUP

SIR,—Your annotation of Oct. 10 contains a number of incorrect statements, which should not be allowed to pass unchecked.

1. The statement is made that, since the clinical differentiation between typhus and Rocky Mountain spotted fever is very difficult, "the only means of diagnosis in the past has been the inoculation of guineapigs with blood from the patient immediately it has been withdrawn." The foremost expert on Rocky Mountain spotted fever, Dr. R. R. Parker, director of the Rocky Mountain Laboratory, Hamilton, Montana, not long ago defined the position quite differently. He says (*J. Amer. med. Ass.* 1938, **110**, 1275), "The three tests ordinarily used are the infection test, the Weil-Felix reaction and the protection, or virus-neutralisation, test." "On the whole the most useful and practical test is the Weil-Felix reaction, that is, the test of the patient's serum for agglutinins against O strains of *Proteus X19* and *X2*." The serum of some patients with Rocky Mountain spotted fever reacts only with *Proteus* O*X2*, or shows a higher agglutinin titre for O*X2* than for O*X19*. Either of these results confirms the diagnosis and at the same time excludes that of typhus fever. When, on the other hand, the predominant agglutinins are of the O*X19* type, a differential diagnosis as between the two diseases cannot be made. Davis and Parker (*Publ. Hlth Rep. Wash.* 1938, **53**, 1525) showed that both the O*X19* and the O*X2* antigens are essential components of the O antigen of the rickettsia of Rocky Mountain spotted fever. In the annotation, however, the existence of the *Proteus* O*X2* type is not mentioned.

2. Bengtson and Topping (*Amer. J. publ. Hlth*, 1942, **32**, 48), whose paper is the subject of the annotation, did not employ *Proteus* O*X2* antigen in their agglutination tests. The "Weil-Felix titres" recorded in their tables and figures refer solely to agglutination of *Proteus* O*X19*, and cannot therefore be accepted as an adequate statement of the agglutinative properties of the sera they tested. Nevertheless Bengtson and Topping give a clear account of the relative usefulness and the limitations of the two reactions they employed—namely, complement-fixation with typhus rickettsiæ and agglutination with *Proteus* O*X19*. They showed that the complement-fixation test is the better criterion of past infection with endemic typhus, whereas the O*X19* reaction is the more useful test in early diagnosis. The annotation, however, does not mention the latter fact, and, moreover, it gives an inaccurate summary of the results Bengtson and Topping obtained with the complement-fixation test in cases of Rocky Mountain spotted fever. Thus a note is made of their table 4 which shows that the sera from 14 cases of Rocky Mountain spotted fever gave no cross-fixation with typhus rickettsiæ, but no mention is made of table 5 which shows 8 cases in which there was cross-fixation. Bengtson and Topping rightly concluded that "the question of the best method for the early diagnosis and the differentiation between typhus and Rocky Mountain spotted fever is one which cannot

be answered completely at the present time." In the annotation, however, Bengtson and Topping are said to have demonstrated that the complement-fixation test "will clearly differentiate between endemic typhus and Rocky Mountain spotted fever." Incidentally Bengtson's name is spelt wrongly throughout the annotation.

3. Having thus exaggerated the value of the complement-fixation test with rickettsial antigens the annotation proceeds as follows: "Though more or less specific for the typhus group of fevers, the Weil-Felix reaction being an indirect test has never been happily accepted by many workers. These new antigens may give us a simple inexpensive direct test for diagnosing this group of diseases." Your readers may compare this sweeping statement with the following quotation from a review by Zinsser (*Amer. J. Hyg.* 1937, **25**, 451), who devoted the last ten years of his life to the study of typhus fever: "The so-called 'Weil-Felix reaction' has attained extraordinary importance in the diagnosis of typhus fever and considerable significance for the differentiation of the several groups of Rickettsia infection. The three most important varieties of proteus bacilli in use at the present time are those known as OX19, OX2 and OXK."

It is well established that the position of the Weil-Felix reaction as a diagnostic test for typhus fever is in some respects better than that of the classical sero-diagnostic method—the Widal test in typhoid fever. There is, admittedly, still plenty of room for improvement in the serology of the typhus group of fevers. Advances may be expected from the adoption of methods similar to those now in use in the serum diagnosis of the enteric fevers. These, it is known, are based on the separate estimation of the antibodies that correspond to the different kinds of antigen possessed by typhoid and paratyphoid bacilli. Rickettsiæ, too, are complex antigenically (Castaneda and Zia, *J. exp. Med.* 1933, **58**, 55). The heat-stable O antigens of rickettsiæ are available in the most convenient form in the three types of *Proteus X*. What is needed are suitably prepared reagents for the demonstration of the antibodies to the heat-labile rickettsial antigens. These will supplement rather than replace the *Proteus* O*X* antigens.

Emergency Public Health Laboratory Service. A. FELIX.

*** No-one doubts that the Weil-Felix reaction has been of great value in the past and probably will be in the future, especially in the hands of particular individuals. The purpose of the annotation was to stress the desire for and the possibilities of a relatively simple biologically specific reaction for widespread use, which all will agree is to be preferred at any time to a concomitant reaction, one recent example of the non-specificity of the latter being the observation that certain experimental animals inoculated with clean strains of *Spirillum minus* develop agglutinins for the O*XK* strain of *Proteus* in much higher titre than after infection with *Rickettsia orientalis*.—ED. L.

MECHANISM OF CONVULSIVE THERAPY

SIR,—The originators of insulin therapy and of 'Cardiazol' or convulsive therapy got their names transposed in your annotation of Oct. 31 (p. 520); this, of course, was a mere slip of the pen. The statement, however, that "convulsive therapy and particularly electric shock" is to be preferred in such and such a psychosis, is open to misinterpretation, since they are one and the same treatment, electrical shock being nothing but a technical modification of Meduna's convulsive therapy. He first used camphorated oil for producing the convulsion when introducing it in 1934, and later cardiazol. The next technical improvement was the substitution for cardiazol of 'Triazol' by Walk and Mayer-Gross in 1938, and in the same year Cerletti and Bini replaced injection by electrical stimulation of the cortex. These historical facts are not important, but it should be more widely known that the therapeutic effects of this electrical modification, all too easy to carry out with the foolproof apparatus, are in no wise superior to those obtained by cardiazol or triazol; in fact, it is to be feared that ultimately they may prove to be inferior, since their consolidation by means of psychotherapy is becoming neglected, the patients being more and more left to themselves between treatments.

Cornwall. H. PULLAR-STRECKER.

RICKETS IN THE BREAST-FED BABY

SIR,—I am glad to see it stressed in your leader of Oct. 10 that the pregnant and nursing mother should drink her daily pint of milk and should also have adequate vitamin D. Thus sufficient vitamin D should be ensured in her breast milk for baby's needs—surely better than giving the baby some form of vitamin D in addition to his natural food, and thus upsetting the perfect balance of his diet? Certainly the synthetic form of vitamin D is more desirable than cod-liver oil for obvious digestive reasons. If cod-liver oil is used then the Government compound is to be chosen since much less need be given. Halibut-liver oil is in the same way suitable since one drop of this, we are told, is equivalent to one teaspoon of pure cod-liver oil in its vitamin content. My experience with a good many normal breast-fed babies who have been given the compound (or halibut-liver oil drops) is that slight sickness resulted or the stools became relaxed and perhaps frequent, or that both these conditions occurred. On comparing foods available now with those of prewar days, I cannot see that we need seriously lack in any way. Our margarine has been reinforced with vitamins equivalent to butter standard, and the ration of this is sufficient. Eggs, although today they are less plentiful, have previously been available to most mothers with priority claims. Meat has never been considered a good source of vitamin D. It seems reasonable that the fats and milk, together with fish-liver oil taken by the average mother, will ensure ample of the antirachitic vitamin in her milk, and her fully breast-fed child should not even now need an extra addition any more than he did before the war.

The Nursery World. E. MORRISON.

MASKED HYPERTHYROIDISM

SIR,—Your leading article of Oct. 31 is to be welcomed as a sign that thyrotoxicosis is becoming increasingly recognised as a mosaic of symptoms, of which hypermetabolism is only one constituent fragment. Your observation that we lack any simple means of measuring thyroid function, other than by the indirect means of the BMR, indicates a major difficulty both in research and clinical work. Far too much attention has been paid to the BMR in the past as an index of severity of, and standard of comparison between, cases of thyrotoxicosis, and most clinicians now rely very little on it. The work of Hinton and his associates, which you quote as suggesting a separation between hyperthyroidism and hypermetabolism, is a step in the right direction, and may end a deadlock which has so long existed in investigation of thyrotoxicosis. Such a separation would be complementary to the work of Dodds and Robertson (*Lancet*, 1933, ii, 1137 and 1197), who separated hypometabolism from hypothyroidism. They raised the BMR of a patient with myxœdema to + 30% by administering dinitro-*o*-cresol, but without relief of symptoms; yet with thyroid extract symptoms were relieved at a BMR of + 10%.

It would be a major advance if some substance could be found capable of lowering the BMR in thyrotoxicosis without ameliorating the hyperthyroidism—such as occurs with iodine. It is also to be hoped that future researches on thyrotoxicosis will not be concentrated entirely on the thyroid gland, to the neglect of the soil in which the disease flourishes—namely, the constitutional make-up of the patient.

Cambridge. LAURENCE MARTIN.

NICOTINIC ACID FOR ANGINA PECTORIS?

SIR,—I think we should differentiate between the immediate transitory effects and the lasting effects of nicotinic acid. Its immediate effect is to relax spasm. As regards the lasting effects, many patients suffering from heart troubles show constipation, defective absorption of nutriment and increased production of indole. C. P. Rhoads of New York demonstrated that indole impaired the utilisation of vitamin B (*J. Amer. med. Ass.* 1939, **113**, 297) whose constituents are components of several enzymes and ferments. Nicotinamide is an important part of co-zymase of von Euler-Chelpin and of Warburg's co-ferment; thiamine pyrophosphorylate is an essential part of co-carboxylase; riboflavin phosphorylate attached to a special protein is the yellow

enzyme of Warburg and Christian. If the chain of enzymes interrupted by indole is restored by the administration of nicotinic acid then cell respiration, cell metabolism, cell repair and cell reproduction may develop normally.

Cambridge. G. BROCK.

INSTRUCTION IN VACCINATION

SIR,—It is painful to read in your issue of Oct. 31 a letter from Mr. Bangham alleging, on the most slender grounds, that too much time is spent in instruction in vaccination. Fewer classes could scarcely give the opportunity of seeing the results of many vaccinations at different stages and would hardly allow each member of the class to perform a few vaccinations himself. Mr. Bangham's suggestion that students should attend only a third of the present number of classes (a change that would in any case necessitate an Act of Parliament to repeal the appropriate Vaccination Act) appears to us to be ill-judged and alien to all ideals of study. It is all the more regrettable that such a suggestion should come from the secretary of an organisation that purports to attempt to increase the efficiency of medical training.

C. R. WOODARD.
The Middlesex Hospital Medical School. P. H. AUGUSTUS JONASON.
W. R. PROBERT.

Public Health

London in 1941

Dr. Allen Daley's interim report covers but twenty pages and as the population of the county was subject to violent fluctuations during 1941 and "estimates of the average population which have been prepared are not available for publication" the vital statistics give a general rather than a detailed picture of what happened in the second full year of war. In the future the chief value of this report will be to show the effects of sudden massive movements and disturbing elements on the prevalence of endemic infections in a vast city of normally stationary but diminishing population. The only infection which shows a substantial increase on expectation is bacillary dysentery, notifications of which increased from 16 in 1940 to 610 in 1941. This disease (or group of diseases) appears to be on the increase everywhere. The births in the county decreased from 46,213 in 1940 to 33,944 in 1941; notifications of ophthalmia neonatorum decreased from 303 to 185, and in view of the considerable increase of gonorrhœa during the war this fall is as remarkable as it is satisfactory. Maternal mortality rose from 1·98 to 3·05 and infant mortality from 48 to 57, mainly because of an increase in neonatal mortality from 22·5 to 28·4. Deaths from rheumatic fever fell from 49 to 40, and in the under-15 age-group from 14 to 1. Scarlet fever gave 2374 notifications with only 2 deaths, and Dr. Daley attributes "the phenomenal reduction" in fatality during the last few years partly to new methods of treatment.

There were 85,000 elementary-school children in London in January and 150,000 at the end of the year. Thus about half the child population were fluctuating to and fro, and this migration, combined with shelter-life, must have had a big influence on the dissemination of the endemic infections known or suspected to be spread by droplets. Yet the diseases set up by these infections showed no great variation from normal. The increase of measles from 5447 to 11,039, though apparently great, is well within the biennial fluctuations of London. The increase of whooping-cough from 669 to 7944 is more significant, for though our knowledge of the prevalence of this disease is slight it does appear that in 1941 whooping-cough occurred throughout the country in an epidemic of unprecedented magnitude. Whooping-cough is one of the endemic infections known to be spread solely by droplets and owing to the explosive cough its striking distance is wide. There is no evidence in this report of any increase in venereal diseases. There was a slight increase in numbers of notifications of tuberculosis which gave cause for anxiety "in view of the smaller population at risk."

The county council and its staff (of whom 57 lost their lives and 95 were injured by enemy action) deserve high praise for their energy and devotion in carrying on the health and hospital services of the county in the unprecedented difficulties caused by bombardment. In spite of much adverse criticism at first, there can be no doubt that London was prepared to meet what it got.

Cancer in War-time

The crude cancer mortality-rates for England and Wales per million population for the years 1939–41 were 1620, 1662, 1670, and many districts, especially evacuation areas, show a rise in mortality from cancer. Men, but not women, serving in the forces are excluded from local statistics and as these are of ages little prone to cancer, local rates are artificially raised, and it is not possible in war-time to cast satisfactory standardised rates. But on the whole it seems that the slight fall in real cancer mortality of the years immediately preceding the war continues. We ought to get an appreciable fall in mortality as the result of treatment of cancer in sites where the prospect of clinical cure is good if undertaken early, but no great reduction can be expected as the disease is much more common in sites where cure cannot be obtained. Still the number of deaths from cancer of the uterus, breast and buccal cavity is disappointing, and in giving local authorities a further year's grace for their schemes to provide facilities under the Cancer Act of 1939 the Minister of Health (Circular 2707) emphasises that this does not mean that they should not do what they can to help these patients now.

Infectious Disease in England and Wales

WEEK ENDED OCT. 31

Notifications.—The following cases of infectious disease were notified during the week: scarlet fever, 2583; whooping-cough, 1015; diphtheria, 898; paratyphoid, 7; typhoid, 12; measles (excluding rubella), 6812; pneumonia (primary or influenzal), 582; puerperal pyrexia, 145; cerebrospinal fever, 57; poliomyelitis, 27; polio-encephalitis, 4; encephalitis lethargica, 3; dysentery, 290 (151 in Nant Conway, Caernarvon); ophthalmia neonatorum, 83. No case of smallpox, cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Oct. 21 was 1771, including scarlet fever, 579; diphtheria, 238; measles, 189; whooping-cough, 180; enteritis, 61; chicken-pox, 67; erysipelas, 50; mumps, 29; poliomyelitis, 7; dysentery, 79; cerebrospinal fever, 16; puerperal sepsis, 11; enteric fever, 4; german measles, 2; glandular fever, 1.

Deaths.—In 126 great towns there were no deaths from enteric fever, 1 (1) from scarlet fever, 4 (0) from measles, 8 (1) from whooping-cough, 14 (1) from diphtheria, 38 (5) from diarrhœa and enteritis under two years, and 11 (1) from influenza. The figures in parentheses are those for London itself.

Newcastle-on-Tyne reported 3 deaths from diphtheria, and Wolverhampton had 5 fatal cases of diarrhœa.

The number of stillbirths notified during the week was 214 (corresponding to a rate of 38 per thousand total births), including 25 in London.

SMALLPOX IN SCOTLAND

Two cases of smallpox have been notified in Edinburgh. Dr. W. G. Clark, medical officer of health, in a statement to the public health committee said that one patient was a miner aged 48 and the other a young man of 21. Both had been patients in the same medical institution and both came from homes in the same street in the south-east of the city. It was not known whether they were infected from other patients or from visitors. No connexion with the Fife epidemic had been shown. No new cases have been reported in Fife now for over twelve days and of the 28 cases notified one is now thought not to have been smallpox. The Department of Health reiterates its advice to medical practitioners to report doubtful cases of chickenpox, especially in adults, to the medical officer of health.

THE American Gastroenterological Association will issue the first number of their official publication, *Gastroenterology*, on Jan. 1. Dr. W. C. Alvarez will take over the editorship in June, 1943, and till then contributions should be sent to the assistant editor, Dr. A. C. Ivy, 303, East Chicago Avenue, Chicago, Illinois. The journal will be published monthly by the Williams and Wilkins Company, Baltimore, Maryland, and the annual subscription price is $6.

Notes and News

NEW COMPULSORY POWERS IN CONTROL OF VENEREAL DISEASE

A NEW Defence Regulation 33B extends the powers available under the present law for the treatment of venereal diseases and enables compulsion to be applied in carefully defined circumstances. Hitherto the treatment of these diseases in this country has been based exclusively on voluntary attendance, in contrast with the compulsory basis adopted in most other countries. The new regulation leaves the voluntary basis unchanged, but provides for compulsion where necessary to bring under treatment the group of persons—small in number, but responsible for a comparatively large amount of harm—who are impervious to methods of education and persuasion and refuse to attend for treatment though known to be infected and to be spreading infection. Persons named by two separate patients under treatment as the suspected source of their infection can be required, by notice served on them by the medical officer of health of the county or county borough in which they live, to attend for examination and if necessary treatment by a "special practitioner," and to continue treatment in accordance with his directions until they are certified as free from venereal disease in a communicable form. A special practitioner is defined as a registered medical practitioner employed as, or qualified to act as, a venereal diseases officer of a treatment centre; or a specialist in venereal diseases in His Majesty's Forces or the Dominions Forces; or any other practitioner designated for the purpose by the Minister of Health. The regulation imposes on special practitioners, on receiving reasonably convincing information from a patient under treatment for venereal disease as to the person from whom the patient suspects that the disease was contracted ("the contact"), the duty of sending particulars to the medical officer of health of the county or county borough in which the contact is believed to live. All information obtained is of course to be treated as strictly confidential. A special practitioner is also required to supply free of charge any necessary certificates, and to serve on the contact (if found on examination to be suffering from venereal disease) a notice requiring attendance for treatment. The Minister has given general directions to special practitioners, has prescribed certain forms, and compiled notes for their guidance. Copies of all these may be obtained from the secretary, Ministry of Health, Whitehall, SW1, or from a medical officer of health. A special practitioner in private practice is under no obligation to undertake the examination or treatment as a private patient of a contact on whom a notice has been served by a medical officer of health; but if he does accept the contact as a private patient he must discharge the duties laid down in the regulation. Any doctor who wishes to be designated as a special practitioner for the purposes of the regulation should apply to the medical officer of health of the county or county borough in which he practises, giving particulars of his experience in the treatment of venereal diseases.

Royal College of Surgeons of England

The annual meeting of fellows and members will be held at the college, Lincoln's Inn Fields, London, WC2, on Thursday, Nov. 19, at 2.30 PM.

Royal College of Physicians of Edinburgh

At a quarterly meeting of the college held on Nov. 3, with Dr. Charles McNeil, the president, in the chair, Dr. W. G. Clark (Edinburgh) took his seat as a fellow, and Dr. P. A. H. King (London), Dr. J. G. Sclater (Edinburgh), Dr. Adam Patrick (Dundee) and Dr. J. W. McNee (Glasgow) were elected to the fellowship.

Royal Faculty of Physicians and Surgeons of Glasgow

At the annual meeting of the faculty the following were elected office-bearers for the ensuing year: president, Mr. James MacDonald; visitor, Mr. William Sewell; treasurer, Mr. William Richard; librarian, Dr. W. R. Snodgrass; representative to the General Medical Council, Mr. Andrew Allison; other councillors, Mr. J. Scouler Buchanan, Dr. John Gardner, Dr. Stanley Graham, Dr. John Henderson, Mr. J. A. C. Macewen, Dr. Donald McIntyre, Dr. Noah Morris, Mr. G. T. Mowat, Dr. J. Forbes Webster, and Mr. Roy Young.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council of the college, held on Oct. 24, with Sir William Fletcher Shaw, the president, in the chair, W. J. H. M. Beattie, London, and C. M. Gwillim, London, were admitted to the fellowship. The following were also admitted to the membership:

Muriel Boycott, J. W. D. Buttery, Marie H. Calverley, I. M. Jackson, Mary K. Lawlor, W. J. McCord, Eleanor M. Mills, Mary R. Thompson, H. M. Wolff; and (in absentia) Herbert Agar, T. A. Gillie, and J. F. B. Wyper.

The following have been awarded the diploma of the college:

Islay C. Barne, Margaret R. Biggs, Ruth C. M. Brown, Gertrude M. Child, Edith M. Druitt, Margaret D. Dudley-Brown, Anne C. Fletcher, F. G. M. Fraser, Mairidh A. M. N. Graham, Margaret A. Hay, J. S. Hesketh, Eluned M. Lloyd-Davies, R. A. Manclark, G. H. Moore, J. E. E. Morgan, H. A. Ripman, Edward Sharp, Daisy M. Smith, and Ruth M. Stubbs.

A Notable Meeting

Over a hundred doctors of the Allied Nations were received on Nov. 6 by the vice-chancellor of the University of Liverpool at a gathering arranged by the British Council. Physicians, surgeons and specialists in the armies, navies and air forces of America, India, Egypt, Czechoslovakia, Poland, Belgium, France, Brazil, Holland and China listened to an address on the principles of diagnosis by Prof. Henry Cohen. Members of the medical profession, he averred, had long recognised the importance of exchanging ideas, but the conferences which they used to hold were "staged." Demonstrations were arranged, addresses delivered, papers read, but the opportunity of seeing colleagues working with their everyday material was rare. Today the war had given such an opportunity to those who in the Allied cause were now in this country, and Professor Cohen spoke for all his colleagues in offering the hospitality of our clinics, our wards, our laboratories, our libraries and our societies to them. "Mix with us," he urged, "criticise us, teach us . . . What then is more fitting that at this juncture the members of a profession whose father, Hippocrates, wrote 'Where there is love of man, there also is love of the art,' should gather in this land from the four corners of the earth and reap from the evil which has brought them together, the good which should come from their meeting?"

Royal Society of Medicine

The section of pathology will hold a laboratory meeting on Tuesday, Nov. 17, at 3.30 PM, at the Chester Beatty Research Institute, Royal Cancer Hospital, SW3. On Nov. 19, at 2 PM, at the section of dermatology, Dr. A. Adler will read a paper on solar dermatitis in adults. At 2.30 PM, on the same day, at the section of neurology, Mr. Arnold Sorsby, Dr. Arthur Elkeles and Mr. A. Dickson Wright will give a preliminary report on vital staining in intracranial surgery. Dr. James Carson and Air-Commodore Geoffrey Keynes will afterwards open a discussion on myasthenia gravis and thymectomy. The section of obstetrics and gynæcology, at 3.30 PM, on Nov. 20, are holding a discussion on new developments in the investigation and treatment of sterility, when Mr. V. B. Green-Armytage and Mr. Kenneth Walker will be the openers. On the same day at the section of radiology at 4.45 PM Surgeon Captain W. D. W. Brooks, Major J. Duncan White and Wing-Commander R. R. Trail will open a discussion on the place of miniature radiography in the diagnosis of chest conditions. The section of physical medicine will meet at Horton Emergency Hospital, Epsom, at 11 AM, on Nov. 21, to discuss rehabilitation in disease and injury of the chest. Mr. R. C. Brock will deal with the surgical aspect and Dr. J. L. Livingstone will speak on bronchitis and asthma with special reference to breathing exercises.

Transfusions for Maternity Cases

The Minister of Health has arranged for the resources of the Emergency Blood Transfusion Services to be available for maternity cases wherever stocks of transfusion fluids and sets of equipment can be spared from the treatment of war casualties. Local welfare authorities who wish to make use of this offer should get in touch with the transfusion officer of their region. No charge will be made, but local authorities will be expected to make their own arrangements for transport and be responsible for any incidental expenses.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

University of Cambridge

On Oct. 31 the degrees of MB, BChir were conferred on R. M. Stuart Matthews.

Association of Anæsthetists of Great Britain and Ireland

The following officers have been elected by this society for the ensuing year: president, Lieut.-Colonel Ashley Daly; vice-president, Dr. C. F. Hadfield; treasurer, Dr. Z. Mennell; and secretary, Dr. A. D. Marston.

Appointments

FOY, HUMPHREY, MRCS, DMRE: visiting radiologist to the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry.

KINNEAR, JOHN, MD ST AND, MRCPE: workmen's compensation referee for dermatitis for Cupar, Arbroath, Dunblane, Dundee, Forfar and Perth.

Births, Marriages and Deaths

BIRTHS

CARTER.—On Oct. 25, at Castlederg, co. Tyrone, the wife of Surgeon-Lieutenant D. M. F. Carter, RNVR—a son.

KERSHAW.—On Nov. 1, at Leamington Spa, the wife of Surgeon-Lieutenant G. R. Kershaw, RNVR—a son.

MARSHALL.—On Nov. 3, at Carshalton, the wife of Dr. T. S. Marshall—a son.

MATHIAS.—On Nov. 4, at Aberystwyth, the wife of Dr. J. Gordon Mathias—a son.

MOORE.—On Nov. 9, in London, the wife of Mr. A. M. A. Moore, FRCS—a daughter.

THOMSON.—On Oct. 27, the wife of Dr. E. J. Thomson, of Grimsby—a son.

WILLIAMS.—On Nov. 4, at Oxford, to Dr. Joy Williams (*née* Jewson), wife of Squadron-Leader Denis Williams, MD, RAFVR—a son.

MARRIAGES

BINNING—MCKECHNIE.—On Nov. 7, at Northwood, John Sydney Binning, MB, captain RAMC, to Patience Mary McKechnie.

COMPSTON—STANDISH.—On Nov. 7, at St. Peter's, Vere Street, Nigel Dean Compston, MRCP, to Diana Mary Standish.

STRADLING—SNOW.—On Oct. 31, at Exeter, Peter Stradling, LRCP, to Peggy Snow, LRCP.

VERE-HODGE—BUDGEN.—On Nov. 7, in London, Nicholas Vere-Hodge, FRCS, squadron-leader RAFVR, to Ann Budgen.

WALKER—KITWOOD.—On Oct. 29, at Boston, Lincolnshire, Gerald Walker, MRCS, to Lyndis Margaret Elizabeth Kitwood.

DEATHS

BELL.—On Nov. 3, at Netley, Delvine Bell, MC, MB EDIN., lieut.-colonel RAMC, of Denewood, Rustington, Sussex.

GOWLLAND.—On Nov. 1, at The Star and Garter Home, Richmond, Edward Lake Gowlland, DSO, TD, MB LOND, lieut.-colonel RAMC, aged 65.

HOGG.—On Nov. 5, at Poona, William Peat Hogg, MC, MB ABERD, DTM & H, lieut.-colonel IMS.

INCE.—On Nov. 7, at Sturry, Kent, Arthur Godfrey Ince, FRCS.

MARTIN.—On Nov. 1, at Bath, Henry Meredith Martin, M CH DUBL, FRCS.

PIRRET.—On Nov. 1, Mary Janet Pirret, MD GLASG, DPH, of West Cromwell Road, SW5.

WALKER.—On Nov. 7, at Balerno, Sir Norman Walker, MD EDIN, LLD, FRCPE, aged 80.

New EMS Hospital in Wales

On Nov. 3 the Minister of Health opened the 600-bed Merriston Hospital, near Swansea, which has been built at a cost of £180,000 under the Emergency Hospital Scheme. Until heavier emergency demands arise, five wards, with 200 beds, are being placed at the disposal of the Welsh National Memorial Association for tuberculosis cases. The hospital will also be used to relieve the pressure on the Swansea and General Eye Hospital.

Tuberculosis Association

A meeting of this society will be held at 26, Portland Place, London, W1, on Friday, Nov 20, at 2.45 PM, when Dr. Clifford Hoyle, Dr. W. C. Fowler and Mr. R. C. Brock will open a discussion on the treatment of tuberculous pyothorax.

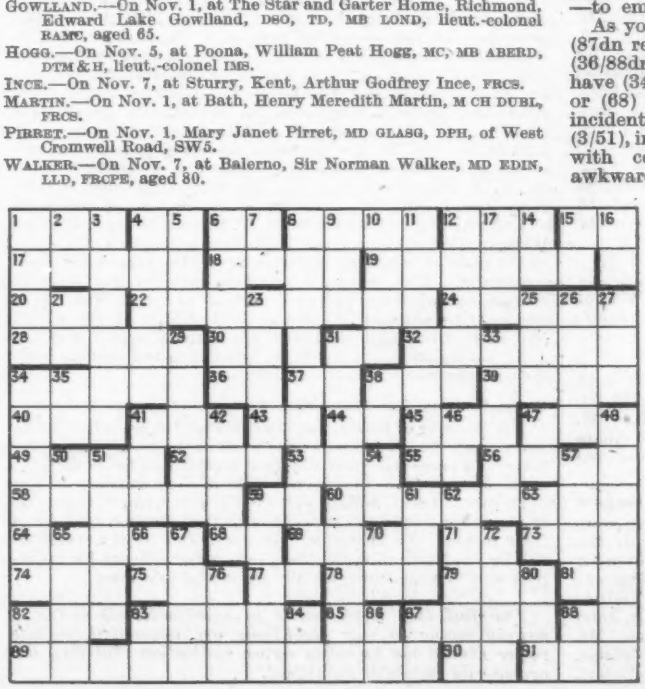
LANCET CROSSWORD

SIR,—When (19rev)s of (57/76) (10rev)s meet out (12dn/76) and discuss where the very best (62rev/87ac rev) (1ac rev/1dn) are (70) be (73), (79) is sure to (88ac rev/36rev)hear it said,—" (16) always (37) to Mr. (29) (34dn) for ours. You can always (36/21rev) (54rev) his to be (34ac) free from all (31dn rev/65rev) (22/76) (15dn rev/69rev)." (49/52rev) the (60/51) in these (45rev/47ac rev)s, (63rev/53rev/36rev) than the (42) you frequent, my (37/14rev) sir, (16/36) I to employ my (43/71) in (38ac rev/83dn/31ac) Tom and Dick's (11rev), (83ac)'s (8dn/84rev) (28rev), or even a *Lancet* (3/51)! What (82ac/63/51) of high principles (18/70rev/87dn rev) in my (58)! How (25rev/74rev/7rev) of commerce! How my (23/71rev) would have triumphed!

Actually Margaret, my (43/71), was so (81/41ac rev) at the slightest (83dn/7rev) that the (59ac/46) of us might accept the (25/37rev/51) that she (15ac rev/26rev) out (54rev) me without as much as " (37/14rev/20rev)," but (43/4ac/36rev/76)—as she always (14/71rev) when (12ac rev/4dn)—, " Oh, (14/7rev) (87dn/64) yourself!" She was a (37/14rev) (70/41dn rev) (43/71)—she came from the (43/71/43rev) at (5)—though " suffering much from (32) and (66/59dn)," and (41ac rev/36rev) similar (8ac). Unfortunately I had had to (89) her rather (17rev/21rev) that very morning because she would (56rev) a (9) of (35rev/87) (82dn)s who shouted (40rev/87dn) remarks on the (12ac rev/59ac/46rev/84rev) in our ages. (68) now, thanks to you, sir, I am in the un(30/88dn/65rev) position of having (54) (43/71). It (39) me not a little —to employ a (91rev/70rev/71rev).

As you yourself (47dn rev/7rev) a (87dn/6ac) hand in (87dn rev/13/31ac) this (85ac/86), you cannot very well (36/88dn/16rev) it in your columns. A pity; I should have (34ac) (30/78/87dn rev) (81/13/31ac) a (59ac/63rev) or (68) of highly (87dn/47dn rev/90/65rev) prose—and incidentally (30/45/83dn/31ac) the (72rev) of your (3/51), instead of all this (54/38dn rev/30/71) where I have with considerable (76/30/77/84rev) to (44/71/55rev) awkward words, (88dn/87dn 33) " (88dn/87dn 33)," and quotations, (63) " This (41ac rev/36rev) (67), demi-Paradise," without (12ac rev/70/55rev/76) the theme too much, but with (79rev/41dn rev) double-(62rev/76) (55/59ac rev)s to (27rev/36) and delude the poor (85ac/85ac rev)s who fall for that (68/55 rev) of thing.

You (82dn rev/87dn) me (87dn/88dn/71) a (62 rev/87ac rev) about " (48) of the Common (6dn)s." Well, you are not (63 rev/4ac/76) (79) from me. My (31dn rev)s (70) (14/76) it are (44/38ac/36rev/65rev). The (85ac/86) and its (80rev/61/79) authors are too (37/14rev) to be taken (44) (66/44), and the (3) will be a (43/4ac) if it doesn't (38dn/59ac rev) up the entire (87dn rev/13/54rev) anyhow.

(75/2rev) and likewise (24ac rev)
(29) (34dn).

*** We invited Mr. Quince to contribute a crossword, taking as his theme a recent *Lancet* publication: Mr. Quince, who as everyone knows is apt to call a spade " a black-suited worker," wrote to refuse in the above harsh terms. The solution will appear in a fortnight's time when we will have had an opportunity to find out what he really did say.—ED. L.